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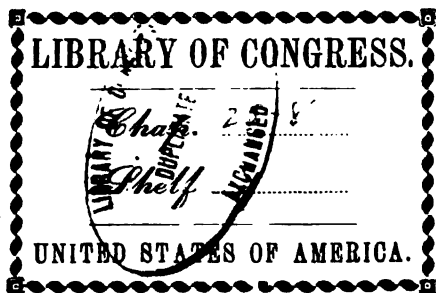
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Public Documents of Massachusetts :

BEING THE

ANNUAL REPORTS

OF VARIOUS

PUBLIC OFFICERS AND INSTITUTIONS

FOR THE YEAR

1874.

PUBLISHED BY THE SECRETARY OF THE COMMONWEALTH,
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1875.

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SIXTH ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH

OF

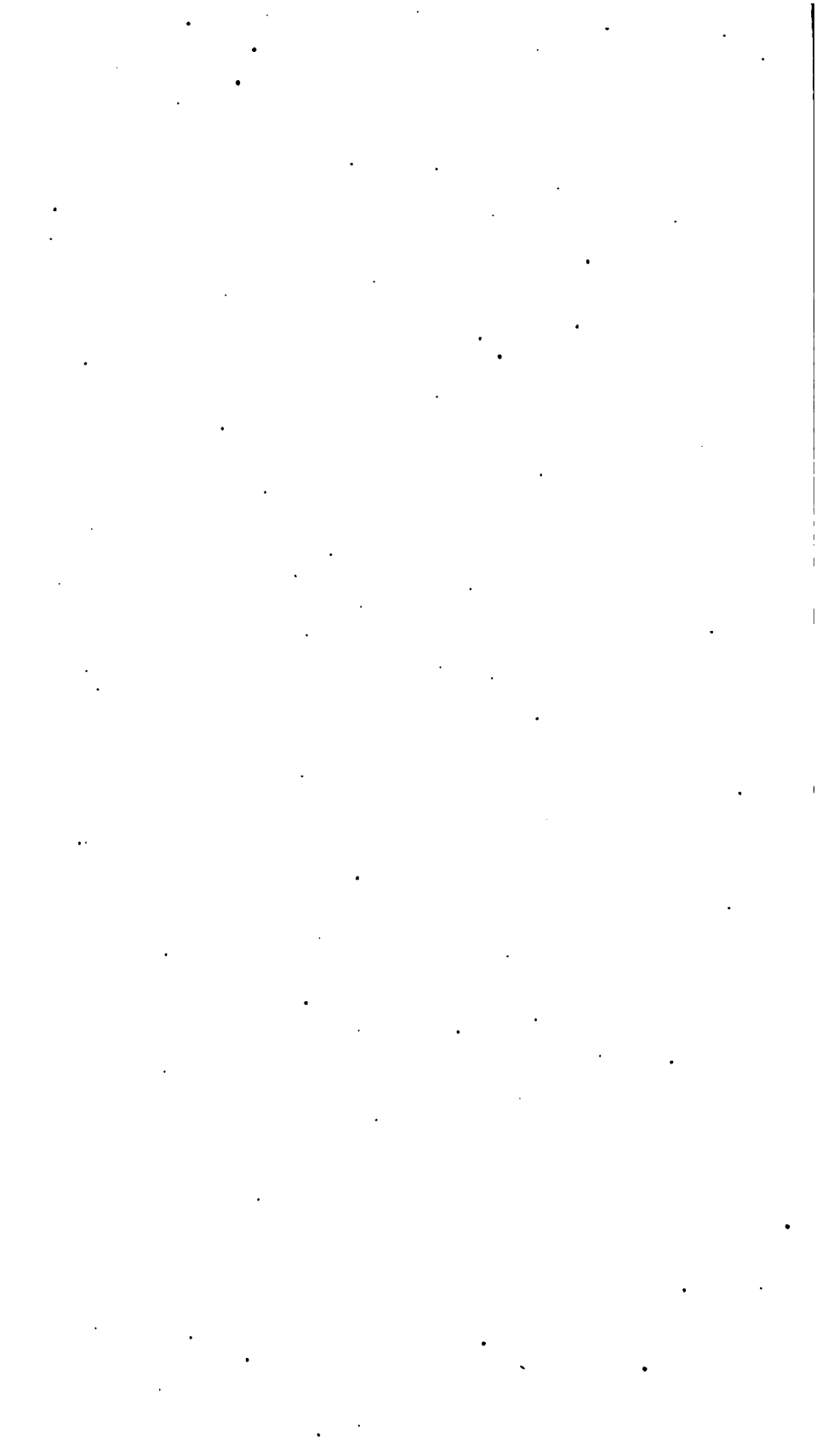
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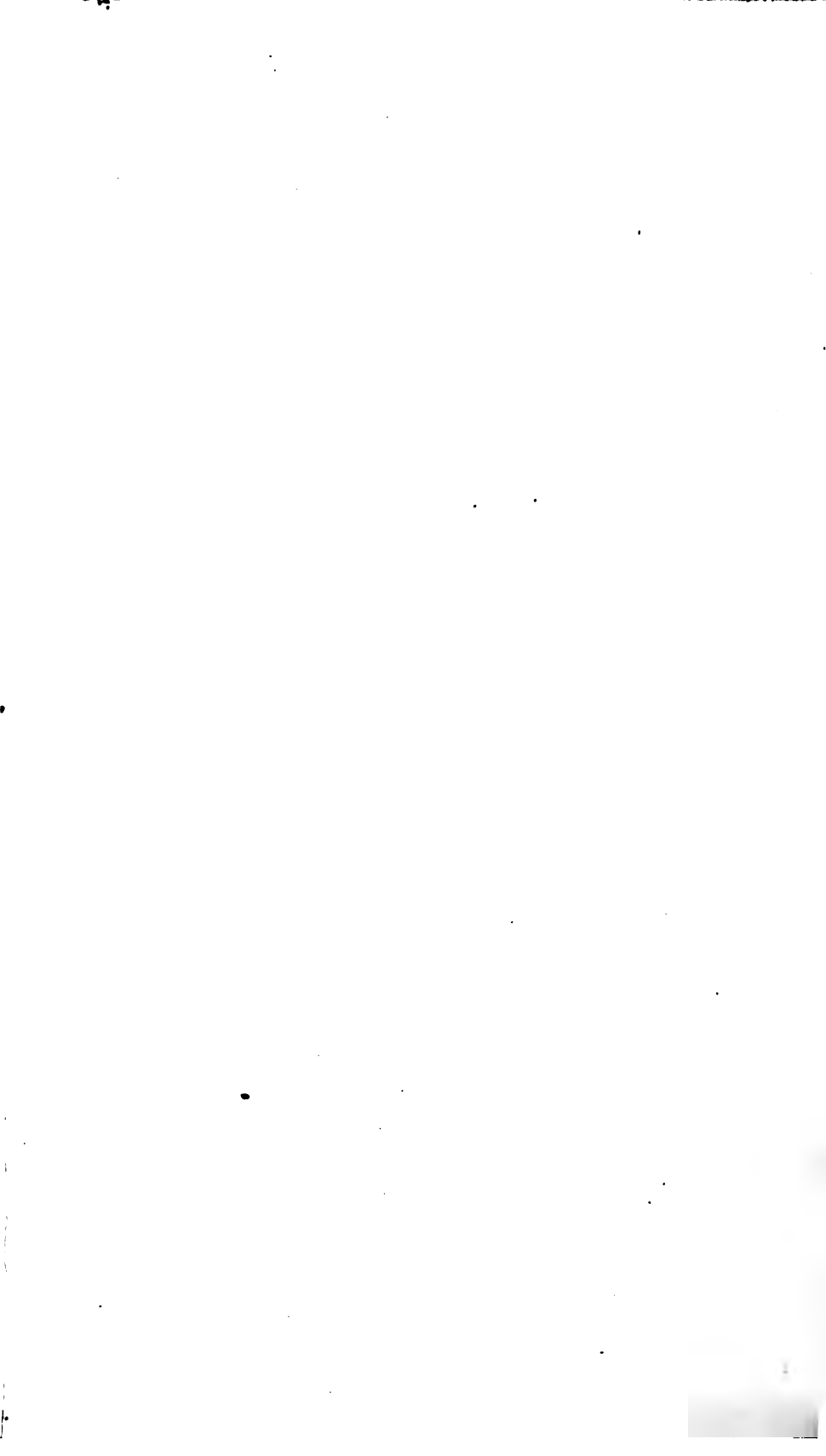
1875.



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	Page
Articles of food and medicine, effects on meat of animals,	174
Ashland, typhoid fever in,	333
Asylums, inebriate,	17, 27
attendants in,	42
Average cost of patients in hospitals,	64
Bedding in stock-cars,	97
Beef-cattle, quality of:	
Massachusetts and Maine,	118
New Hampshire, Vermont, Northern New York, Canada, the	
West and home supply,	119
Bernardston, pauperism from intemperance in,	48
Bibliography of cremation,	315
Boston Live-Stock market, statistics of:	
Beef-cattle,—	
number and weight for 1873 (<i>Tables</i>),	110, 111
number and source from 1862 to 1874 (<i>Table</i>),	114
Sheep and lambs,—	
number and source from 1862 to 1874 (<i>Table</i>),	115
Annual receipts from 1862 to 1874,—	
of all animals (<i>Tables</i>),	112, 113
Receipts for 1874 of cattle from Chicago,—	
by refrigerator cars, monthly (<i>Table</i>),	116
Boston, mortality rate of, from 1870 to 1874,	334
pauperism from intemperance in,	48
sewerage of parts of, defective,	335
Brighton abattoir, etc.,	15, 19, 187
Brighton, "blood cure" in,	338
typhoid fever in,	338, 339
stock-yards described,	129
Bruising of legs of cattle in transportation,	102
Buffalo stock-yards described,	126
Butchers' Slaughtering and Melting Association:	
Act of incorporation,	197
Regulations for business of,	190
Report of the president of, for 1874,	187
Butter, pearl, chemical analysis of,	196
Burial-grounds, regulations for, in England,	277
Carbonic Acid:	
Amount in railroad passenger cars (<i>Table</i>),	233
smoking cars (<i>Tables</i>),	232, 234

Decayed teeth, cause of,	359
of children (<i>Table</i>),	360
Dedham, pauperism from intemperance in,	49
Derby, the late Dr. George, eulogy of,	3
Diet-table, Mass. State Prison,	374
prisons of Great Britain,	375
Dimensions of stock-cars,	95, 97
Diminution of number of animals kept by families,	83
Diphtheria in Conway,	341
in North Adams,	347
Disease, registration of,	21
Diseased meat in general,	166
tests of,	167
remedy against, by inspection,	178
Diseases of animals, acute and chronic,	158
Drains and sewers, pollution of water and air by,	5
Dressed beef, low-priced, to be regarded with suspicion,	117
Drunkard, definition and treatment of,	31
no systematic effort by the law to cure him as one dis-	
eased,	30
sentimental regard for,	29
treatment of, by the law,	29
Drunkards ought to be deprived of civil rights,	32
Drunkenness, now and formerly,	28
East Boston, mortality-rate from 1870 to 1874,	334
Employment of inmates of inebriate asylums,	39
Expenses of the Board for 1874,	23
Fairhaven, pauperism from intemperance in,	49
Food of the people now and formerly,	80
Ground-atmosphere, composition of air in,	20, 207
Gardner, pauperism from intemperance in,	49
Gloucester, pauperism from intemperance in,	49
Goads, proper and improper,	103
injury to hide and flesh of cattle by,	104
Hancock, pauperism from intemperance in,	49
Haverhill, pauperism from intemperance in,	49
Health of towns,	21, 329
reports from, alphabetically arranged,	332
Health, value to the State,	18, 57

	Page
Lowell, scarlet fever in,	345
Ludlow, pauperism from intemperance in,	50
Lynnfield, pauperism from intemperance in,	50
Mask, slaughtering, described,	181
Massachusetts State Prison, analysis of air in,	377
mortality-rate from 1820 to 1874 (<i>Table</i>),	366
mortality-rate from 1828 to 1864, accord- ing to length of sentence (<i>Table</i>),	373
mortality and sickness-rate from 1821 to 1874 (<i>Table</i>),	369
present unhealthy influences in,	378
relative accommodation of wings (<i>Table</i>),	376
ventilation of,	376
Meat, amount condemned,	175
bad, easily sold,	169
diseased, remedies against,	178
from very young animals,	168
salted or pickled,	169
severely bruised,	168
standard for condemning,	176
Meat-supply and public health,	19, 135
routes of travel for,	120
Medical opinions on cremation and burial,	301
Methuen, pauperism from intemperance in,	50
Milford, pauperism from intemperance in,	50
Millbury, pauperism from intemperance in,	50
Modern methods of cremation, Brunetti's,	256
Gorini's,	256
Polli's,	255
Siemens's,	258
Sir Henry Thompson's,	263
Monroe, pauperism from intemperance in,	50
Montgomery, pauperism from intemperance in,	50
Mortality-rate, of Boston from 1870 to 1874,	334
British army, 1872,	61
cases sickness in England,	61
Chelsea, Charlestown and Somerville,	336
East Boston, from 1870 to 1874,	335
of hospitals,	61
of London,	70
Massachusetts, for 1872 (<i>Table</i>),	67
Massachusetts, from 1866 to 1872 (<i>Table</i>),	67
(<i>Table</i>),	68

ALPHABETICAL INDEX.

xiii

	Page
Mortality-rate, Massachusetts increasing annually,	69
reduction of, in England by water-supply and drain- age,	70, 72
Mortality-rate of various prisons at home and abroad (<i>Table</i>), . . .	371
Mortality-table of large cities for 1872,	66
Mystic water, impurities of,	336
 New Ashford, pauperism from intemperance in,	50
Newbury, pauperism from intemperance in,	51
Norfolk, pauperism from intemperance in,	51
North Adams, diphtheria in,	347
Noxious and offensive trades, law concerning,	8
 Overcrowding of animals on cars,	90
deterioration of their flesh as food from,	93
 Parasites of animals,	142
precautions against, beef,	157
pork,	155
use of microscope,	156
prevention in sheep,	157
Pauperism, intemperance as a cause,	45
Pearl butter, chemical analysis of,	196
Penal inebriate asylums,	43
Pittsfield, pauperism from intemperance in,	51
Pleuro-pneumonia,	159
inoculation of calves,	159
Poisons, sale and use of,	7
Present unhealthy influences in Massachusetts State Prison, . . .	378
Progressive diminution of home meat-supply,	81
Proper and improper goods,	103
Putrid meat, appearance before cooking,	141
as a cause of cachectic disease,	140
antiseptic effects of good cooking,	141
in sausages,	141
sickness produced by it,	139
use of, as food,	138-141
 Quality of beef-cattle, Massachusetts and Maine,	118
New Hampshire, Vermont, Northern New York, Canada, the West and home supply,	119

	Page
Railroad cars, ventilation of,	20, 227
Raynham, pauperism from intemperance in,	51
Registration of disease,	21
Relative accommodation of wings of Massachusetts State Prison (Table),	376
Religious instruction and worship in inebriate asylums,	42
Richmond, pauperism from intemperance in,	51
Rinderpest,	160
Routes of travel of our meat-supply,	120
Rowley, pauperism from intemperance in,	51
Rules for management of slaughter-houses,	180
Russell, pauperism from intemperance in,	51
 Salem, Creek street sewerage,	 348
Sandwich, pauperism from intemperance in,	51
Scarlet fever in Lowell,	345
Seekonk, scarlet fever in,	354
Sentimental regard for the drunkard,	29
Severely bruised meat,	168
Sickness, average duration of hospital cases,	62
people of Massachusetts for, 1870,	62
working people for 1870,	62
individual pecuniary expense of, in Massachusetts, for 1870,	64
total loss to State from,	64
rate, England and Europe,	59
British army, 1872,	61
assumed for Massachusetts in 1870,	62
• Sites for inebriate asylums,	39
Slaughtering, necessity of rest of the animal before,	106
Slaughter-houses, rules for management of,	180
Slaughtering-mask described,	181
Springfield, pauperism from intemperance in,	51
Standard for condemning meat,	176
Starving, effect on animals and their flesh,	168
State institutions, inmates there from intemperance,	52
Stock-yards described, Albany,	127
Brighton,	129
Buffalo,	126
Chicago,	121
Watertown, Mass.,	130
Stockbridge, pauperism from intemperance in,	51
Stoughton, pauperism from intemperance in,	51
Superintendent of inebriate asylum,	41

	Page
Wells near graves, in Massachusetts, analysis of water (<i>Table</i>), . . .	297, 298
in Dresden, analysis of water (<i>Table</i>), . . .	281
in Massachusetts described,	292
(<i>Table</i>),	295
Well-water in city of Dresden, analysis (<i>Table</i>),	283
from thirteen towns in Massachusetts (<i>Table</i>),	301
West Springfield, typhoid fever in,	356
Winchendon, sore throat,	357
Woburn, defective drainage of,	357

Commonwealth of Massachusetts.

STATE BOARD OF HEALTH, BOSTON, JANUARY 20, 1875.

HON. GEORGE B. LORING, *President of the Senate of Massachusetts.*

SIR:—I have the honor to present to the legislature the Sixth Annual Report of the State Board of Health of Massachusetts.

Very respectfully,
Your obedient servant,

CHARLES F. FOLSOM, M. D.,
Secretary of the State Board of Health.

GENERAL REPORT OF THE BOARD.

*To the Honorable the Senate and the House of Representatives of
Massachusetts.*

The State Board of Health herewith presents its Sixth Annual Report.

Early in the past summer, the State Board of Health, the community, and sanitary science, suffered the great loss of the death of Dr. George Derby, who died June 20, 1874. How great this loss was only those can know who knew his untiring industry, his well-directed enthusiasm, his high sense of honor, and his devotion to his convictions of duty.

Resolutions of respect to his memory have reached us from both shores of our continent. "To a well-trained mind there were added an honesty of purpose, an enthusiasm for his work, a firmness of character, and a personal address which inspired others to help him in his good work, and won for him the respect and regard of his professional colleagues. The reputation of such a man is necessarily not so brilliant or widespread as that of one whose services have been of a more conspicuous character; but a slight consideration of what Dr. Derby accomplished, directly by his example in Massachusetts, and indirectly by his influence on public hygiene without regard to state limits,—an influence not yet spent, nor likely to be spent in this generation,—shows how richly he merits the long and grateful remembrance of his countrymen."—*The Nation*.

At a meeting of the Board, June 22, 1874, the following address by the chairman, Dr. Henry I. Bowditch, was read.

It was also, by unanimous vote, printed in circular form for distribution :—

Gentlemen of the State Board of Health :

A few days since, I warned you of the serious illness of our dear friend and honored Secretary, DR. GEORGE DERBY. It is with great sorrow that I have summoned you again in consequence of his death.

Permit me to recall to your notice some of the more salient points in his history, with many of which, you, who have been associated with him in this Board, are already partially or perchance fully acquainted.

Dr. Derby was born in Salem, in 1819; he was the son of John Derby, an eminent merchant of that city.

He took his degree from the Harvard Medical School in 1843. For many years he practised very quietly in Boston, but was little known by the public, or to the profession, until the late war brought to light his latent energy, and his admirable character.

The first call of President Lincoln upon the patriotism of the country at the commencement of the civil war, found our friend prompt and determined to do his whole duty. He entered again with praiseworthy zeal into all the work of student life. He took special lessons in practical surgery from our most eminent surgeons, and, with more than youthful enthusiasm, studied out the improvements in medicine and surgery that had been brought forward during the many years since his pupilage, from 1838 to 1843. This act marked two of those traits of character which we, his associates on the Board of Health, have seen and admired so much during our intercourse with him, viz. : his conscientiousness, and his thoroughness in his dealings with any question. He was unwilling to undertake the care of our patriot soldiers without fitting himself in the most perfect manner for the task. He received from Governor Andrew the commission of surgeon of the 23d regiment of the Massachusetts Volunteers. He went through the whole war without a furlough, and was always ready to sacrifice himself for the good of the soldiers. He was fearless in the presence of danger, performing important operations on the field while under fire, with a perfect coolness and deliberation, when others, superior to him in authority, shrunk from the ordeal to which his sense of professional duty summoned him.

Having thus served, with a reputation for ability unsurpassed by any one, he left the army at the termination of the war, a man comparatively broken down in health, and with the prospect of commencing anew his professional life. For months, by most careful regimen, and the daily use of quinine, he had fought against the insidious encroachments of malarial disease.

When the war closed, the reaction took place, in a corresponding depression of his health.

The government, fully appreciating his worth, and desirous of aiding him in his perfect recovery, appointed him to the charge of the National Soldiers' Home, at Augusta, Maine.

After several months' residence there, having partially, at least, regained his vigor, he resumed practice in Boston. He came back to us a man of noteworthy fame, as a patriot, as an able and fully-practised surgeon, and a most high-toned gentleman.

Soon after his return he published some papers relating to hygiene, and he was called to fill the post of surgeon at the City Hospital. He also was made Professor of Hygiene, at Harvard College.

During the war, he married Miss Parsons, granddaughter of the celebrated Theophilus Parsons, formerly Chief Justice of the Supreme Court of this State. Dr. Derby left a widow and two children.

June 21, 1869, just five years ago, the legislature passed the Act establishing the State Board of Health.

For two years previously Dr. Derby edited the Reports to the legislature relating to the births, marriages and deaths in Massachusetts. In the preface to the Report, in 1867, the Secretary of State had used the following language in reference to Dr. Derby, that "during the late war he was four years in active service, with the largest reputation as surgeon."

His publications, as well as his acquired reputation at the State House and abroad, readily pointed him out as the person most fitted, on the score of his manliness, ability, and integrity, to be Secretary of the new Board. He, in fact, had no rival.

I need not remind you of all that he has done for us; of the great works he has inaugurated, and successfully carried forward. But none of us, I suspect, even now realize how devoted he has been; we all know how often and how perfectly we trusted him. We felt that the honor of our Board would be cautiously and firmly sustained. We remember his genial and commanding presence; his indefatigable zeal in everything that was ordered by the Board. We were sure of him, as the most reliable person we could have. How much the present position of the Board, as a motive-force in the community, depends on his really wonderful faculty of meeting and of moulding men, we shall never exactly know. For my own part, gentlemen, words would fail me to give you my idea of the debt we owe to him. He guarded our honor and safety with so jealous a care that sometimes I was inclined to think him unduly cautious. I never had any forebodings in regard to the safety and ultimate success of the Board, for I believe that State, or Preventive Medicine, has taken so deep a root in the conscience of the English-speaking race, that hereafter, boards of health, or in other words, for the prevention of disease, must forever exist; and they will have more and more weight upon the policy of states and of nations, as well as upon the private habits of individuals.

And now, gentlemen, what is the lesson that comes to us from the life-work of our dear friend and co-laborer in a most noble cause?

Why, simply this: that we should one and all go on with renewed zeal and with an untiring devotion that shall be worthy of him. Let us make his course our example in our future career. If we do this, I have no fear; for the future of any cause must be bright, provided it be carried forward intelligently, and with the single endeavor to do honestly and justly the duty of the hour, as our friend Derby always did his.

God grant his grace to each one of us, and enable all of us to feel, during our future connection with the Board, the beauty of the example left to us by the life of our dead associate.

After the death of Dr. Derby, Dr. F. W. Draper, of Boston, who had been for some years intimately associated with him in sanitary investigations, and who had made several valuable contributions to the reports of the Board, was elected temporary Secretary, he having kindly consented to serve for three months. He fulfilled the duties of the office faithfully and

efficiently, and much regret was felt by the members of the Board in severing official connection with so able an associate. He retired from office September 12, 1874, when the present Secretary was elected.

LOCAL BOARDS OF HEALTH.

The Board has evidence, from time to time, that local boards in various parts of the State are not aware of the extent of their large powers, and that they also are often reluctant to exercise the great power allowed to them by the statutes. They not infrequently, too, make the mistake of supposing that the law authorizing the State Board of Health to grant hearings and to pass judgment on complaint against any persons engaged in any of the so-called noxious trades, takes away from themselves all responsibility in such matters, although the powers of local boards remain precisely as they were before the passage of said Act, and are fuller and more summary than those of the State Board.

It is to be desired that these statutes should be simplified, and that local boards of health should always be elected or appointed which are not connected with their respective town or city governments.

In England, at the present time, there is a serious question whether the word "may" would not be beneficially changed to "must" in the laws granting authority to boards of health.

DRAINS AND SEWERS.

By the last report of the board of health of the city of Boston, and by the statements found in the present report under the head of health of towns, from our correspondents in East Boston, Charlestown, Salem, Woburn, Worcester, and several of the smaller towns, it may be seen how great is the magnitude of this question, and how important its bearing upon the public health.

The most recent experiments tend to show that we have been vastly overrating the oxidizing and disinfecting properties of air, water and earth. There can be no question of the fact that we are drinking water and breathing air contaminated by sewage and sewage emanations; and the fact is admitted, that both air and water may be polluted to a danger-

ous degree without perceptible change in taste, color or smell. We must not deceive ourselves because such poisons do not "slay like the sword," because long habit gives us a certain kind of immunity from evil results, and because, in our new and sparsely populated country, we have a soil not yet saturated with the filth of centuries.

Upon the many hundred acres of mud and marsh exposed at low tide in and near Boston, the sediment from the sewage of a large part of that city, of Cambridge, of part of Somerville, and of the whole Miller's River basin, is deposited in great quantities, setting free sulphuretted hydrogen, "carbo-ammoniacal" gases, etc., into the air breathed by the inhabitants of the metropolitan district. In the other cities referred to, evils will be found correspondingly great.

The remedies must be determined to a great degree for each particular case; but poisonous sewage emanations might at least be kept out of our dwellings if the drainage of all houses were inspected, before occupancy, by the local health officers; and it would be well if all matters relating to drainage and sewerage could be referred to independent boards of health; or, in the case of very large cities, if there could be a central executive bureau, a "Board of Works," so that there would be a more thorough coöperation in the different departments.

As to the final disposition of sewage, it is not yet possible to say definitely what one of the many plans now suggested and tried in different parts of the world will become generally adopted as possessing the least number of disadvantages, and the question must often be decided with reference to purely local considerations.

HYDROGRAPHICAL SURVEY.

From a consideration of the last-mentioned subject, and upon purely economic grounds, the Board desires to call the attention of the legislature to this subject. The storage and supply of water for domestic and manufacturing purposes and the construction of systems of sewerage cannot be properly regulated by individual cities and towns without prejudice to the health or interests of other places. This can only be done by a comprehensive survey of large areas of country,

as has been already suggested in the report of the state board of education on the proposed survey of the Commonwealth.

In connection with this survey, and under the section entitled "Biological," the Board would urge that arrangements should be made for a sanitary survey of the State. The Board would also draw the attention of the legislature to the report made by our late Secretary, Dr. Derby, upon the waters in the various ponds of the State, and to his suggestion that prompt measures should be taken by the legislature in order to keep these waters perfectly pure for future generations. [*Fourth Annual Report of the State Board of Health of Massachusetts*, pp. 107, 108.]

THE SALE AND USE OF POISONS.

The statutes provide that whoever "sells any arsenic, strychnine, corrosive sublimate or prussic acid, without the written prescription of a physician," shall keep a record of the date, etc., of such sale and of the name of the buyer.

We would respectfully suggest that no poisonous drug should be sold without a written order either from a physician or from the person requiring it.

The fact that several deaths have occurred from the use of chloroform during the past year renders appropriate our calling attention to the potency of this drug, and to the extreme care thought to be necessary in its administration in those places where it is used to produce complete anæsthesia. The use of so dangerous a remedy should be reserved for those cases where the safer agent is manifestly unsuitable or its use impracticable. Although chloroform is used by many English and continental surgeons, without their ever having had, during long years of experience, any fatal result from it, yet it must be remembered that the precautions observed by them are numerous; that they have a large corps of skilled assistants; that we have a much safer agent in ether; and that unforeseen and sudden collapse does occur and produce a fatal result, although rarely, in strong, healthy persons from the inhalation of chloroform, while such cases are thus far entirely unknown of ether.

THE LAW CONCERNING SLAUGHTER-HOUSES AND NOXIOUS
AND OFFENSIVE TRADES.

The hearing in the case of Messrs. J. P. Squire & Co. was closed December 29, 1873, and some time after the efforts of the Board had failed to induce the proprietors of the large swine-slaughtering establishments in the Miller's River basin to establish a large abattoir farther from the centres of population and nearer to a large body of water. The consideration of this case was taken up first in order at the request of the petitioners; and the testimony and arguments, as published by Messrs. J. P. Squire & Co., occupy 596 pages of closely-printed octavo.

That a nuisance, in the broadest sense of the term, was proved to exist in the Miller's River district there could be no manner of doubt; nor did the evidence fail to indicate what were the factors in the case. It was clearly shown that the gaseous products and emanations from rendering putrid grease, from trying out both fresh and rancid lard, from boiling dead animals, from foul pigpens and transportation cars, from scalding vats, from great quantities of sewage and decomposing animal matter exposed to the action of the air while spread out over large surfaces of impervious mud, and from the dock mud itself, were contaminating the air to a degree intensely annoying to the senses and extremely dangerous to the public health.

The odors, generally speaking, were shown to be distinguishable, if taken singly, although their combination in many cases rendered it impossible to trace the offence of a given time to its proper source. They were shown, too, not to be an exception to nature's law, and to be diffused to some degree in all directions, whatever the barometric pressure of the atmosphere or the direction of the prevalent wind, if not blowing violently. When the winds were light and variable, forming currents and counter-currents of air, the noxious odors were as capricious as the winds themselves in the spots (often quite circumscribed) where they became noticeable; and, by the use of high chimneys, they were sometimes offensive at a distance when scarcely perceptible at their source. They also existed at times in sharply-defined *strata*,

so as to be nauseating at one part of a house and not disagreeable in another; and this fact held good of persons even in different parts of the same room.

But the Board had before them other questions more difficult of solution, before they could decide whether or not three-quarters of a million hogs could be annually slaughtered and hundreds of tons of lard rendered, within two miles in an air line from the State House, without danger to the public health and public welfare.

In the first place, it was not possible to say to what degree each one of the contributing causes was responsible for the sum total of offence, and great advantage was anticipated from the filling-in of the flats, and from the other improvements which were then in progress. It was thought, too, that the completion of these improvements would narrow the inquiry as to the relative importance of such causes of offence as might remain.

In the second place, there were no justifiable grounds for interfering with private interests while there remained so much doubt as to the precise origin of this offence, and while it was contended that, with a proper system of sewerage and with sufficient care in conducting the various "noxious trades," all sources of complaint would disappear.

The members of the Board have, from time to time, made the Miller's River basin, and the various establishments complained of, the subjects of careful personal inspection, but they have felt obliged to reserve final judgment, as they have always done in similar cases, and as they are now doing with regard to other establishments against which formal complaints have been made, and where hearings have already been held.

After the protracted hearing in the case of Messrs. Squire & Co., decision in reference to that establishment, and all further action in the cases of the others complained of, was postponed for the following reasons:—

Mr. Ransom C. Taylor, of Worcester, had appealed to the Supreme Court* against the decision of this Board, of August

* Claiming that the law under which the Board acted (Acts and Resolves passed by the General Court of Massachusetts in the year 1871, chap. 167) was unconstitutional, and that the proceedings were irregular.

27, 1873, whereby it was ordered that he "cease and desist" from the boiling of bones and meat on the premises then occupied by him. Pending a decision in this case, the Board acted under eminent legal counsel in postponing any further judgments.

After Mr. Taylor had abandoned his case and had consented to a perpetual injunction, other reasons influenced the Board to still further delay their decision.

It was fully proved that a very offensive odor emanated from the vicinity of the establishment of Messrs. J. P. Squire & Co. Whether this odor was caused by the establishment in question, by the extensive and very foul tide-water basins, by the establishments where the rendering of house-grease, etc., is carried on without proper facilities for avoiding offence, or by all three causes in common, has not as yet been passed upon by the Board.

In the meantime, by direction of the legislature, these basins were in the process of filling-in, sewers were making, and new means of avoiding offence had been introduced by the firm of Messrs. Squire & Co., while others were fast following their example. These improvements are not yet completed, but are making rapid progress.

In view of these facts, of the great number of employes to whom maintenance is afforded, and of the large amount of meat which is furnished at a low rate to very many people, on the one hand, and of the right of a community to unpolluted air, on the other hand, and in view of the undisputed fact that the offensive odors have very decidedly diminished, it is believed that the Board has acted wisely in reserving its decision in the case of Messrs. J. P. Squire & Co.

With regard to the others complained of, who are using the best methods known to them for avoiding offence, it would, in the opinion of the Board, be equally unwise to pass judgment, and, consequently, inadvisable to have hearings at present.

With regard to others still, however, who have not at any time used these improved methods, some of whom render only house-grease and refuse from provision stores, there has been no reason why the Board should not have hearings, if the petitioners had desired to present the cases.

Petitions had been entered complaining against the following-named parties :—

J. P. Squire & Co. (*hog-slaughtering, pork-packing and lard-rendering*).

Chas. H. North & Co. (*hog-slaughtering, pork-packing and lard-rendering*).

The Boynton Packing Co. (*hog-slaughtering, pork-packing, and lard rendering*).

Lincoln, Chamberlain & Co. (*pork-packing and lard-rendering*).

William Reardon (*rendering*).

Thomas Spellman (*rendering*).

Charles O'Neill (*rendering*).

Thomas Shevlin (*rendering*).

Garrett Barry (*rendering*).

From the inspections made from time to time by the Board, it appeared that the first three have been and are using all the means in their power, and are ready to adopt any suggestions of the Board, to so conduct their business as to make it inoffensive.

The rest allow the volatile products from rendering to escape freely into the surrounding air, a course which necessarily gives rise to bad smells. These gaseous products from subjecting fats to high temperatures are highly irritating, slowly oxidizable, and to be perceived at considerable distances. Such have been exceptionally the sources of annoyance during the past summer to people living in Charlestown, Somerville, Cambridge, and on the westerly side of Beacon Hill, in Boston.

In order to ascertain the wishes of the petitioners, the secretary was directed to confer with their counsel, who stated subsequently, at a meeting of the Board, that he had not been able to ascertain that any of them wished to proceed farther, to so great a degree had the nuisance been abated.* One of the petitioners, still resident in Cambridge, has expressed a similar opinion; and the rest, seven in number, have been

* Some facts bearing upon this subject will be found under the head of "Health of Towns," from correspondents in Charlestown and Somerville.

addressed by letter. In the two cases, where replies have been received, there have been expressions of opinion unfavorable to further proceedings against the parties complained of, and in regard to whom no hearings have been held, although dissatisfaction was expressed that a condemnatory decision had not been arrived at in the case of Messrs. J. P. Squire & Co. Under the existing laws, therefore, this Board can take no action in these cases unless new complaints be made.

The Board has endeavored faithfully, and at the cost of considerable time and trouble, to ascertain, as nearly as possible, the precise amount of annoyance caused during the past year to the people living near the Miller's River basin. They have made careful inquiries of persons living in Charlestown, Cambridge, Somerville and Boston, and also of others who frequently pass the slaughtering and rendering establishments; and they cannot but feel that the results of these inquiries have justified their delay in the matter.

The long sewer built by the cities of Cambridge and Somerville, and emptying just below "Craigie's Bridge," has afforded temporary and partial relief from the odors formerly so annoying, inasmuch as the flats now irrigated by the refuse of the Miller's River basin are smaller in extent and less incompletely washed than those over which it was formerly spread. The odors arising from the bed of the river exposed at low tide in the vicinity of the mouth of this sewer have already become the source of serious annoyance, and the sewage exhalations cannot fail to become more dangerous to health each successive year, until some radical change be made either by carrying the sewer out to deep water or by filling-in the flats. This condition of things was predicted by the joint commission, consisting of the Board of Harbor Commissioners and State Board of Health, when they recommended a different course for the sewer and its final emptying into Mystic River.

In the vicinity of the great swine-slaughtering establishments is a large triangular tide-water basin. The owners of this property, Messrs. Walker, Bean & Wilbur, have failed to fill it in to the level of the adjoining newly-made land; and a large, open, filthy cess-pool has thus been made, with a

surface area of about six thousand square feet, into which two large sewers are discharged. The mouths of these two sewers are quite open and unconnected with the open end of the effluent sewer. This is a very serious evil, but one in regard to which the State Board of Health has no authority.

The three methods used by the three large slaughtering establishments for rapidly oxidizing and disinfecting gases and liquids before allowing them to escape have been devised with care and constructed with skill; but it will be impossible to speak definitely of their absolute or comparative efficacy, without careful, scientific determinations.

The apparatus of Messrs. Charles H. North & Co. for inoffensively evaporating the "soup" or "liquor" from rendering tanks,* which contains about eight per cent. of solid matter, deserves careful consideration from all sanitary authorities. It is claimed, too, that glue can be made by this process so as to yield a good profit. Many tons of this "soup" escape daily into the waters about Boston, polluting them to a degree which cannot readily be estimated; and some method should be devised and enforced for getting rid of them, if possible.

To what extent noxious trades should be allowed in the centres of large populations, without supervision of any kind, and to what degree they should be compelled to adopt apparatus, without which nuisance cannot be avoided, are questions which admit of but one answer. The supervision of this Board, which has been rendered necessary in order to enable its members to form intelligent opinions as to the questions now at issue, has accomplished a great deal; but there should be something to take its place when that is withdrawn at the time of the final decision.

At the session of the last legislature the following Act was passed:—

[Chapter 308.]

AN ACT to amend Chapter one hundred and sixty-seven of the Acts of eighteen hundred and seventy-one, relating to Slaughter-houses and Offensive Trades.

Be it enacted, &c., as follows:

SECT. 1. Sections one and two of chapter one hundred and sixty-seven of the Acts of eighteen hundred and seventy-one are hereby

* Compare the Report on the Brighton Abattoir, page 15.

amended, by striking out the words "containing more than four thousand inhabitants," wherever they occur.

SECT. 2. This act shall take effect on its passage.—[*Approved June 5, 1874.*

In accordance with this act, there have been two petitions sent to the Board during the past year.

In the case of Mr. J. H. Corthell, of South Scituate, where seven petitioners complained that a slaughter-house, two hundred and forty-eight feet from the nearest of their three houses, was a nuisance; the Board reserved judgment in order to give the remonstrant opportunity to get rid of the obnoxious features of his business, as he promised to do.

In the case of Messrs. Randall and Ricker, of Reading, eight petitioners complained that the business of rendering tallow and boiling bones, was so conducted as to be "a nuisance in the meaning of the law." Loose, movable covers, in some cases with water-joints, had been adopted by the remonstrants for their rendering-tanks, and the volatile products of their processes were passed under the furnace fires without first condensing the aqueous vapor. The effect of this was to reduce the maximum distance at which offensive odors could be perceived, from about three miles to about one mile, and the distance at which they were frequently quite annoying, and even nauseating, from about three-fourths to about one-fourth of a mile. By climbing to the top of the remonstrants' chimney, members of the Board satisfied themselves that, as a fact, the destruction of the causes of offense was far from complete. There seemed no feasible way of remedying this fault; and the Board ordered that Messrs. Randall and Ricker should cease and desist from the business of bone-boiling, on and after April 1st, 1875, reserving their judgment as regards the tallow-rendering.

There has been no action as yet taken under the law* authorizing three or more persons to associate themselves together, constitute a corporation, and build an abattoir for the purpose of swine-slaughtering.

* Acts and Resolves passed by the General Court of Massachusetts in the year 1874. Chap. 295. "An Act concerning swine-slaughtering associations."

THE BRIGHTON ABATTOIR.

The continued success with which the Butchers' Slaughtering and Melting Association so inoffensively converts a vast quantity of disgusting matter into a valuable material for fertilization, is a subject of congratulation; and their pecuniary profit is fully earned by the skill, care, watchfulness, and cleanliness, with which their business has been conducted. The directors are just introducing apparatus for completely evaporating all of the "soup" from the rendering-tanks, instead of allowing it to escape into the Charles River, a measure of great sanitary importance.

A new and important industry has arisen, too, in making from the finest qualities of the tallow, from the abattoir, very palatable "pearl butter."

The objects aimed at in establishing the abattoir have been in great measure accomplished. A large number of nuisances have been abated, but something remains still to be done. In November, 1874, there were in Brighton fifteen slaughter-houses, being about forty less than were there four years ago. One has since been closed by the city Board of Health, and another for other reasons. Of the remaining thirteen, four were used for killing calves, one for sheep, and in the rest nearly six hundred cattle were killed each week. Their condition ranges from very bad to indifferent; but the Board has not felt willing to exercise the discretionary power given it by the statutes,* and require the proprietors to slaughter upon the premises of the Butchers' Slaughtering and Melting Association, while they could not do so without themselves putting up new buildings on those grounds, which they felt unable to do. On the first of January, 1875, the business of the largest two of these establishments was transferred to the abattoir. The proprietors of them had slaughtered two-fifths of the whole number of cattle killed in the old slaughter-houses then left in Brighton, and had kept their premises in a less offensive condition than the others had kept theirs. The latter are more or less subjects of complaint, and there is now ample room at the abattoir for all the slaughtering of

* Acts and Resolves passed by the General Court of Massachusetts in the year 1870. Chap. 365. Sect. 6.

neat cattle done in the vicinity of Boston. There is, therefore, no longer any reason why a source of so great pollution to the air should not be removed before another summer.

Many of the individual premises of the butchers at the abattoir, are clean and satisfactorily conducted, and some are not so, although the improvement upon the old system is very great. The Board has issued regulations, and revised regulations, but has not been able in all cases to enforce them; and, if we may judge by the experiences of other places, we cannot do so without a frequency of inspection that the present limits of the Board do not permit. Two of its members constitute a permanent committee, and a third is appointed to serve for a month at a time. This imperfect method of supervision must always be very inefficient. It, moreover, causes a heavy drain upon the time of gentlemen who are engaged in private business, and who receive no remuneration for their services.

At a meeting of the Board, held March 4, 1874, it was voted "that this Board earnestly desires that the Butchers' Slaughtering and Melting Association should, if possible, provide for more humane methods of slaughtering animals than those now used, and recommend the method practised at Providence." The abattoir committee has endeavored to accomplish this result, but has not yet been able to suggest any new way which commended itself to all parties concerned.*

It is to be urgently desired that all butchers, now and in the future, slaughtering within the Commonwealth, be required to procure licenses from the local authorities, such licenses to be at once revoked in case of gross violation of the laws, which should be made very stringent as regards cleanliness.

Some action is also recommended by this Board requiring all butchers of cattle and sheep, within the metropolitan district, to conduct their business on the premises of the Butchers' Slaughtering and Melting Association.

The Board desire also to repeat their request for the

* The *pole-axe* used in Great Britain, and the *slaughtering-mask* described in the paper in this report in "Our Meat Supply," have been sent for by the Board, and it is earnestly hoped that one of these instruments may be found to answer all requirements.

appointment of an inspector, with an adequate salary to be paid by the State, whose duty it shall be to supervise the transportation and delivery of live-stock, and to inspect animals and meat for our markets, under such limitations as may be from time to time deemed best.

"LITTLE POND," IN SOUTH BRAINTREE.

In the latter part of October, the Board received a petition from fifty-six residents in South Braintree, representing that "Little Pond," so called, is at certain seasons of the year so far drained of its water, in order to supply power to several manufactories, as to expose to the air a large portion of its bed, covered with decomposing vegetable matter, thereby causing disease and discomfort. The case was investigated, and it was ascertained that disease, and in some cases death, were probably due to this cause, but it was decided that this Board has no authority in the matter.

This is one case of many illustrating the importance of comprehensive topographical surveys of the State.

The subjects of the papers presented this year are the following:—

INEBRIATE ASYLUMS OR HOSPITALS.

By HENRY I. BOWDITCH, M. D., Chairman of the Board.

In this paper the line has been drawn between vicious and morbid drunkenness; only it must not be forgotten that the former may, if persisted in for a long time, engender actual disease, and finally become the latter.

The writer suggests a means of dealing, through inebriate asylums, with one of the most troublesome questions of the day, and we trust the community will give the matter thoughtful consideration. The success of such asylums in other places, proves their feasibility; and it is hoped that their establishment, by making our ideas of responsibility more precise in at least one point, will tend to diminish rather than increase the present unfortunate uncertainty of punishment for crime.

In proof of their estimate of the importance of this subject, the Board has passed the following resolution:—

Voted, That this Board earnestly and unanimously recommend to the legislature, as a sanitary measure of the highest importance, the establishment or endowment of one or more Inebriate Asylums or Hospitals.

THE VALUE OF HEALTH TO THE STATE.

● By W. E. BOARDMAN, M. D., of Boston.

The subject of this paper has interested statisticians in Europe for some years, and it has lately received careful attention in all parts of the enlightened world. Whether all disease, or any class of diseases, can be prevented or "stamped out" or not, the experience of all countries has shown incontestably that the death-rate may be very sensibly diminished by attention to sanitary laws; and the writer has shown in this article that the State can afford to spend some millions of dollars in saving to itself the immense losses now occasioned by disease and consequent poverty in its citizens. It is but fair to say, that these estimates of loss are based upon the supposition that all persons are steadily at work except when they are sick, and that it is not possible to estimate to what degree a certain amount of disease belongs as much to the plan of nature as does death.

Nevertheless, it is clear that money judiciously spent by the State in sanatory works, is returned to it many fold in the welfare of the people.

It adds not a little to the results reached in this paper, that the estimates on which they are based have been set rather low.

ON THE TRANSPORTATION OF LIVE-STOCK.

By J. C. HODLEY, Esq., of Lawrence, Member of the Board.

This essay will commend itself to all persons interested in cattle transportation, whether financially or from a desire that the transportation and slaughtering of animals may be attended with the least amount of suffering possible, and be conducted in a way to secure to the community the best meat. Especially may it be urged upon the notice of drovers and officers of railroads whereon cattle-trains are run. In a financial point of view, it will be well for all such persons to carefully study the facts and tables given by the author, and thereby save

themselves from loss. The subject, too, invites the attention of authorities, in view of the necessity of proper supervision by the State, in order to prevent abuse and loss.

OUR MEAT SUPPLY AND PUBLIC HEALTH.

By C. F. FOLSON, M. D., of Boston, Secretary of the Board.

In this paper are considered the various diseases, parasitic and others, which affect the quality of butcher's meat considered as an article of food for man. The present opinions of experts in reference to other conditions in which animal food is sometimes found, and some facts bearing upon the question of its suitableness for our markets, are also shown.

Meat is divided by the writer into three classes.

First. That which is unquestionably of first-rate quality and from animals perfectly sound and healthy.

Second. That which is innutritive or lacking in the qualities which the best meat should possess; and inspection is urged for this on economic grounds.

Third. That which is positively harmful or dangerous; and in this case inspection is recommended as being necessary on sanitary grounds.

Finally. The only safe way with regard to pork is shown to consist in never eating it unless thoroughly cooked.

THE BRIGHTON ABATTOIR, ETC.

In the report from Mr. Meriam will be found interesting facts with regard to the abattoir. The daily average amount of meat used by each individual of the six hundred thousand supplied by Boston markets is estimated, from this report and from other sources, to be about eleven ounces.

Appended to this report will be found the Regulations of the Butchers' Slaughtering and Melting Association, the Revised Sanitary Regulations of the State Board of Health, an analysis of butter made from suet, and the two Acts in regard to establishing abattoirs.

ON THE COMPOSITION OF THE AIR OF THE GROUND ATMOSPHERE.

By WM. RIPLEY NICHOLS, Professor of General Chemistry in the Massachusetts Institute of Technology.

Professor Nichols has given the results of careful experiments, in order to determine the composition of the air in the soil at different places and under different conditions of temperature, season, etc. They cannot fail to be instructive and suggestive; and, at some future time, it will probably be possible to make from similar but very extensive determinations deductions of value to the health and welfare of the community.

THE VENTILATION OF RAILROAD CARS.

By THEO. W. FISHER, M. D., of Boston.

With Chemical Analyses of the Air in Cars.

By Prof. WM. RIPLEY NICHOLS, of Boston.

This subject is one which interests the greater portion of most American communities. The length of time passed by many in cars, often after a long day's work, when the system is tired and in a condition especially ready to be affected by depressing agencies, serves to render the importance of the matter by no means slight. The defects of our present system are pointed out, and suggestions are made for the application of the remedy.

CREMATION AND BURIAL; AN EXAMINATION OF THEIR RELATIVE ADVANTAGES.

By J. F. A. ADAMS, M. D., of Pittsfield.

An interesting account of the history of cremation, in ancient and in modern times, will be found here, with a very complete list of the bibliography of the subject.

The writer concludes that there exists no necessity, on sanitary or economic grounds, for any change at present in our manner of disposing of the dead.

Many facts and opinions have been collected showing the arguments for and against cremation. It is shown conclusively that cemeteries, *if managed with proper care*, may be made to conduce to the welfare of the public by affording park

abounding in luxuriant vegetation ; while their cost, as compared with that of cremation, can be a serious objection to them only in very densely-populated cities. If neglected or over-crowded, or if suffered to contaminate air or water from want of sufficient care, cemeteries may become very great evils.

At the same time, there is no real objection to cremation, excepting that which arises from religious feeling or association, and which should be respected ; so that individuals should be allowed to choose in what way their own remains are to be disposed of.

REGISTRATION OF DISEASE.

The Board has attempted to carry out for the ensuing year a system of registration of prevalent diseases, which, it is thought, will be of interest and value to physicians and to the community, and which has not been attempted elsewhere. One hundred and fifteen physicians, carefully selected as being in extensive practice, have kindly consented to make weekly reports of the diseases prevalent for the week to Dr. F. W. Draper, as registrar, who suggested this plan, and who will make weekly reports to the Secretary of the Board, to be published each Thursday morning with the reports of mortality in the "Boston Journal."

HEALTH OF TOWNS.

Under this head, will be found interesting facts. We desire to call attention especially to the reports from East Boston, Salem and Woburn, as containing information of value with regard to drainage and sewerage and water-supply.

We desire to express our thanks to our correspondents in different parts of the State, who have reported to us many instructive facts, and who have entered so heartily into the work of preventing as well as curing disease.

We also thank the registrars and city clerks in the most populous places in Massachusetts, for their politeness in furnishing us the vital statistics which have enabled us to prepare our weekly reports of mortality.

The Board has felt indebted, too, to physicians and to

others interested in the public health for coöperation and assistance in many cases.

Valuable books, pamphlets, journals, etc., have been added to the small library of the Board during the year, chiefly as donations from friends. There are also many interesting papers, reports, etc., in manuscript, which could not be replaced if lost.

The Board desires to respectfully call the attention of the legislature to the fact that it has no suitable place for keeping its property, and no room for informal meetings, consultations, etc., with the hope that it will please your honorable body to make some provision in the case.

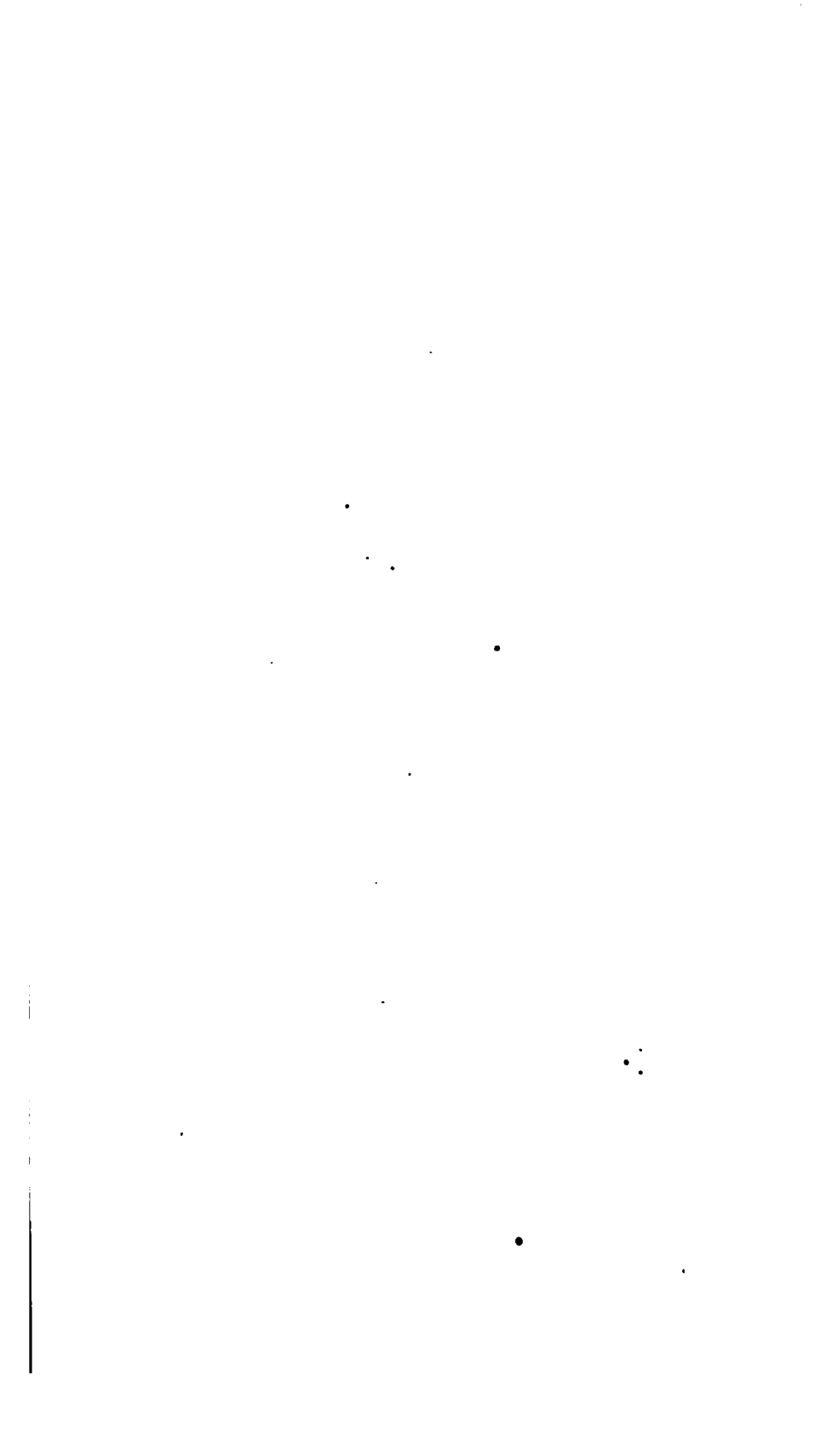
Thus far the Board has failed to expend its annual appropriation by several hundred dollars. We respectfully ask the legislature that we may be allowed to use this sum of money for the purchase of books, journals, maps, etc., to constitute a library on sanitary subjects; provided, however, that such expenditure do not exceed a total of \$500 each year.

All of which is respectfully submitted.

HENRY I. BOWDITCH.
RICHARD FROTHINGHAM.
JOHN C. HOADLEY.
DAVID L. WEBSTER.
R. T. DAVIS.
T. B. NEWHALL.
CHAS. F. FOLSOM.

EXPENSES OF THE BOARD.

Postage and stationery,	\$714 36
Personal expenses of members of the Board,	165 00
Carriages,	72 00
Printing,	372 14
Soldier messengers,	55 72
Office furniture,	83 75
Clerk hire,	229 24
Express charges,	78 25
Storage of reports,	6 00
Books and journals,	71 60
Photographs of hospitals (and postal order),	46 25
Book-binding,	10 00
Telegrams,	21 06
Boston Daily Journal, for registrars,	30 55
Salary of Secretary, <i>pro tempore</i> ,	800 00
W. Ripley Nichols, for investigations and reports,	395 00
J. M. Merrick, for analysis and report,	26 40
Expenses on report on cattle transportation,	376 26
Investigations on consumption in Massachusetts,	174 48
Paid for special investigations,—to E. Cutter,	} 802 50
J. F. A. Adams,	
W. E. Boardman,	
T. W. Fisher,	
A. H. Johnson,	
H. K. Oliver,	
H. E. Marion,	
E. D. Hamilton,	}
J. R. Chadwick,	
Miscellaneous,	52.94
	<hr/>
	\$4,588 50



INEBRIATE ASYLUMS OR HOSPITALS.

By HENRY I. BOWDITCH, M.D.,
CHAIRMAN OF THE BOARD.



INEBRIATE ASYLUMS OR HOSPITALS.

To the Members of the Massachusetts State Board of Health.

GENTLEMEN :—A few days only before the last fatal illness of our excellent friend and co-laborer, Dr. Derby, he urged me to prepare an article on State Inebriate Asylums. I did not then agree to his proposition, but, since his death, I feel that a duty is laid upon me to carry forward any objects he had at heart. Surely, no man I have ever known devoted himself with a more self-sacrificing love or with a more intelligent zeal for a cause than he did to that which we advocate; viz., the improvement of the public health. Any proposition, therefore, made by such a man, and coming to me, as it were, from his open grave, becomes sanctified by death, and not to be refused. Were I now to decline, I should feel that I was recreant to the dying request of a well-beloved friend, and false to his noble example. Would that I could hope to prepare anything that would entirely commend itself to his mature judgment and his literary skill. As a tribute to his dear memory, I dedicate this paper, trusting that it may be of some service to the noble cause of temperance.

THE SUBJECT.

I shall not confine myself closely to the subject proposed by Dr. Derby, although that, viz., the necessity for the State to establish one or more inebriate asylums or hospitals for the cure of drunkards, will be my chief aim. As in my communications made to you on former occasions, I shall divide my present one into several parts, under different heads.

DRUNKENNESS NOW AND FORMERLY.

Drunkenness is one of the roots of all evil to the person, to his family, his friends, and finally to the State at large. It ruins the health of the individual who indulges in it. It fills our prisons with criminals who have voluntarily deprived themselves of reason before their entrance on crime. Our State almshouses are crowded with its direct or indirect victims, and they are a great burden to the tax-paying, temperate people of the Commonwealth. These statements seem truisms—I presume they will be admitted by every one. The records of the police,* of our courts and almshouses fully sustain them. The facts are lamented by all reasonable persons, even if they be temperate users of alcohol themselves. Even literature feels the influence of the avowed or silent anathemas passed at the present day upon this great curse of humanity. We find few poets who now salute in jovial strains the flowing bowl. In order to get any fervent praises of wine, we must go back to those days when to drink deeply was esteemed an honorable feat, and to lie under the table after a dinner rout was not deemed unseemly. Again, there can be no doubt of the truth of the converse proposition, viz., that society at the present hour is permeated by the temperance idea to a degree that would appear ludicrous to our fathers, when drunkenness passed with little rebuke, save from some satirist like Hogarth, of England, or Troost, of Holland, who delighted to show out boldly upon their living canvas the vices of their age. The grossest and most absurd actions were done within the memory almost of our day, and they were met usually only with a laugh, as at a mere practical and natural joke committed while in "one's cups," and therefore to be venially dealt with. No one lost caste "on 'change" or in social life by the performance of acts which would now be deemed disgraceful under similar circumstances. Exact justice, therefore, to the past and to the present times, must, I think, convince every one that drunkenness prevailed with the consent of the community to a

* From 1864 to 1873 inclusive, the yearly average of drunkards noted and recorded by the police of Boston, was as follows:—During first six years, 17,840; during last four years, 19,472. (See Report by E. H. SAVAGE, CHIEF OF POLICE, p. 57, 1873.)

much greater degree formerly than now. Almost all now despise drunkenness, many of us loathe the idea, and would consider the voluntary submission of ourselves to it as an act of the greatest self-degradation. Such being the estimates of drunkenness formerly and now, let us look a moment at our present opinion of the drunkard himself.

SENTIMENTAL REGARD FOR THE DRUNKARD.

On the threshold of this question we meet with a strange anomaly existing in this community. While no one is found to defend drunkenness, we find a very sickly sentimentalism about the drunkard on the part of some persons. Perhaps I might say that, on the part of most people, the opinion prevails that he is almost always a diseased person, and therefore is, under *all* circumstances, to be treated as an invalid, with that gentleness and forbearance which we exercise toward any other invalid. While admitting this plea of invalidism in *certain* cases, as, for example, where there is hereditary taint or under the influence of early instruction or neglect, and in certain dipsomaniacs, I deny the legitimacy of the opinion, in a majority of cases of drunken men or women.

TREATMENT OF THE DRUNKARD BY THE LAW.

A stranger anomaly still, is the fact, that while the majority of the community have these sympathetic views in regard to the drunkard, the law still holds up its terrors and declares, for example, drunkenness no excuse for crime. It tries, in its imperfect way, to keep the State from harm by means of various penalties, but it does little or nothing toward reclaiming the drunkard from his evil habits. On the contrary, the law generally, after interfering with him, leaves him worse than before. It fines him, and he goes away quite as much disposed to get drunk as he was previously. Nay, more! the public fine has degraded him; his self-respect has been seriously injured by this public censure. As a means of preventing a repetition of the offence, a fine is ludicrously inoperative. But if the man be unable to pay the fine, the matter is still worse; the culprit is then put into confinement in jail,

often with criminals, thieves, and desperadoes of all kinds.* Then and there often begins his career of real crime. Moreover, the law at this time deprives the family of the labor of the father, and virtually lets it starve, without a thought of its misery. The law, as thus administered, seems to commit a real crime against the individual, while it defeats its own best endeavor to defend the community from the evils of drunkenness. It may, I think, be summarily asserted, that it does harm to the culprit, beggars in some degree the family, and fails in its endeavor to prevent intemperance.

HITHERTO THE LAW HAS MADE NO SYSTEMATIC EFFORT TO
CURE THE DRUNKARD AS ONE DISEASED.

Thus we find that the State, by its organic laws, gives not the least assistance to the wretched victim of an all-engrossing vice. Much less does it make any attempt to cure drunkenness as a disease to which some persons are just as liable as they are to consumption or nervous diseases, typhoid fever, etc., all of which complaints are provided for by the establishment of public dispensaries, hospitals, etc.

Meanwhile a certain number of persons in the community have gone in an opposite direction, and, filled with that tenderness for the drunkard of which I have already spoken, seem to forget that his acts of drunkenness are real crimes against society. In order to prevent him from going astray, these persons would prohibit even the temperate and occasional use of any so-called intoxicating drinks. They virtually say to the small band of drunkards—"You cannot resist temptation, and, therefore, the whole community should give up its rights, and we mean to pass the strictest sumptuary laws for all of us, in order to prevent you, and a small minority like you, from going astray."

A priori, it seems singular to attempt to prevent the over-use of any article by the few, by shutting off from all persons a legitimate and non-injurious use of the same article. But, in this way, for more than twenty years, the State has endeavored to prevent intemperance among the few by prohibition to all. Moral suasion, and the early and persistent

* For excellent remarks upon this subject, see those by Mr. Savage in Police Report of Boston, page 50, *et seq.*, 1872.

inculcation of temperance, and fitting institutions for the cure of the drunkard have been, comparatively speaking, lost sight of, in the vain hope of extinguishing one of the strongest impulses implanted in the human frame; viz., a love for some stimulus, whether it be tea, coffee, tobacco, or alcohol, or some other of the numberless stimulants found on every part of the globe. Doubtless some good has been done by prohibitory laws in the rural districts, and in some, perhaps, of the larger towns; but this cannot be said of their influence in the larger cities, where the universal and open disregard of these laws, or the secret, but not less injurious evasion of them, has tended to lower in the eyes of the people their estimate generally of law. Nothing can be more fatal to the best interests of a free state than to pass any enactment whereby the keenest reverence for law on the part of the citizen is lessened.

WHAT SHOULD WE DO UNDER THE PRESENT CIRCUMSTANCES?

From the foregoing remarks it will be seen that, in my opinion, the present treatment of drunkenness and the drunkard by individual citizens and the State laws is, to use the mildest epithet, very imperfect in many respects. What more can be done in the premises? It would be very presumptuous on my part were I to claim that I can propose any measures capable of coping effectually with this enormous evil of intemperance in its blighting influence on the individual and the State. Knowing, as my profession teaches me (and modern science fully sustains the idea), the all-powerful influences of social and climatic law, of hereditary taint, and the consequent peculiarities of the individual, I cannot make this claim, but as discussion in a reasonable way is one of the chief sources of progress, I propose to make a few remarks on the following questions, viz. :

1st. What is a drunkard, and how does he stand toward the community in a free state?

2d. How shall the drunkard be treated?

If I seem to write harshly of the drunkard, it is because of the harshness of truth itself in its application to his crimes toward a long-suffering community.

The drunkard voluntarily deprives himself of his highest attribute of reason. For the time being, he makes himself a mumbling idiot, not only incapable of doing rightly a good action, but often he may be strongly inclined to do the vilest deeds toward those whom he most dearly loves, or to any stranger he may chance to meet. By putting himself in this condition he contaminates the life-blood of a free state, whose very existence depends upon her healthy and honest hard-working men and womanly women. If, then, any individual, of either sex, voluntarily resigns that manhood, or that womanhood, and makes himself, or herself, a wild beast, wallowing perhaps like a pig, in the gutter before the door; such persons should be treated humanely, it is true, but they cannot complain if they be treated *decidedly* by the sovereign state of which they claim to be members. As they voluntarily resign their reason, and thereby, for a time at least, destroy their power of acting intelligently, in their share of the public work, they surely cannot complain if their mother state sees fit to punish them, by depriving them, until they behave decently and rightly, of those very rights which they virtually discard by intemperance.

DRUNKARDS OUGHT TO BE DEPRIVED OF CIVIL RIGHTS.

I submit, therefore, that drunkards, if they be inveterate in their habits, should be deprived of all civil rights, in the same manner that the idiot, the insane, the high criminal, are deprived of their rights. I think that the law should allow any one to complain of the habitual drunkard, and on sufficient proof being given of the truth of the allegation before the proper court, said court should decree civil rights to be held in abeyance until a radical cure be effected. The best interests of the State seem to me, even in principle, not only to allow of this procedure, but to absolutely require it as a means of self-defence, if the republic is to continue in a state of purity. I believe the period will arrive when, to be drunk, even in private, will be deemed a misdemeanor, and to appear in public in a state of intoxication will justly be considered one of the greatest of crimes against the good order of the State. Any one public exhibition of this condition of mind will then be considered satisfactory evidence (unless valid

proof be procured to the contrary) of habitual drunkenness, and as such will render the offender amenable to those highest penalties which the State can inflict. For example, for one offence in public, I think that such a person should not be allowed to vote, or exercise his civil rights, for at least six months, and for a longer time on a repetition of the offence. This punishment may seem absurd to some, and be opposed by others, as wholly unjust for the amount of injury done to the State. Some earnest defenders of the rights of man will say that the error of once being intoxicated in public would not deserve so serious a deprivation as that of the right to act generally as a man in civil life. There may also be others who, from the way in which they use their own rights, will think that the deprivation of civil rights from a drunkard, will have but little force towards his cure. A man who will lie in the gutter drunk, is regardless of shame, and what cares he for civil rights? I admit this argument as of some weight as to the efficiency of the punishment, but deny the plea of its injustice. But if this plan fail, what then? Shall we have recourse to a fine, or imprisonment in a jail, as at present, or shall we, in some cases at least, treat the inveterate drunkard as a monomaniac, and place him either voluntarily, or by force of law, in an asylum, where, under moral suasion and entire removal from all external temptations, he may be able to recover his manhood,—renew, in fact, his whole character, and endeavor to be forever afterward an abstainer from every species of intoxicating drinks? That will be his sole hope of salvation. Upon these topics let us have some reasoning together.

Fines, as we have already decided, seem rarely to produce any good effects, and our jails generally prove seminaries of high learning in crime to our drunkards, and bring poverty and wretchedness to their families. All means, at times, would seem to fail of preventing drunkenness and of curing the drunkard. An early training to a manly temperance in our youth is not given; sincere moral suasion in later years is often neglected, and even prohibitory laws, acting upon the whole people, seem worse than useless in some large communities. Drunkenness prevails on all sides. The question constantly arises: What shall be done? Is there no way

open for a union of all who love temperance, so that we may escape from this vast evil? For, notwithstanding the drunkard cannot be restrained by any means heretofore used, we must nevertheless not leave him at liberty to indulge in his vile habit. We must bring him, if possible, under *his own self-control*. In order to do this, he must for a long time, months or years perhaps, be separated from the evil influences to which he has been subjected. For the total reorganization of his nature, he needs some place of refuge to which he can voluntarily retire, or in which he can be by law placed, provided he be too degraded and cannot make any voluntary effort for reformation. This naturally leads us to the discussion of the question of

INEBRIATE ASYLUMS OR HOSPITALS.—STATE INSTITUTIONS.

Massachusetts has never in its own behalf, as the guardian-mother of every one of its inhabitants, attempted to sustain an asylum or hospital for the radical cure of the drunkard. It has, it is true, sparingly aided from its funds a well-conducted "Washingtonian Home," in Boston. This institution has been in operation for the past sixteen years. Quietly, but very efficiently has it done its most noble work. It has been liberally sustained by private charity, eked out by the small fund annually granted by the State.* During the sixteen years that this institution has been in operation, one hundred and fifty-seven thousand (157,000) dollars, have been expended, or a little less than ten thousand (10,000) dollars annually for current expenses. During this period it has treated four thousand two hundred and ten (4,210) persons at a cost of about thirty-eight (38) dollars each.† It is believed that at least one-third of the number have been cured; another third have been greatly improved. One-third have not been permanently changed from their evil habits, but possibly, under increased facilities and every convenience that a great State could provide, a number of this last third might be reclaimed.

* The Washingtonian Home and its Sixteen Years of Work. Address, etc., by Otis Clapp. 1874.

† Recently the corporation has been enabled to erect a commodious building in Boston, at an expense of \$100,000. Thus the total expenditure for this corporation since its commencement, has been \$257,000, of which only \$61,000 have been given by the State in its annual grants.

Surely, this private experiment, in one county of the State, should give encouragement to the legislature to establish other similar institutions to be sustained as works of public necessity. New York has the honor of being the first State in the civilized world that has established and wholly sustained a State Inebriate Asylum.* Maryland has recently done the same. Some other States and countries are now earnestly examining the subject.† England has had its parliamentary committee and report. It has summoned from this country experts upon the matter. Connecticut, Minnesota, and the Provinces of Nova Scotia and Ontario have also had committees on the subject. I am not aware that any movement has yet been made by the legislature of Massachusetts, looking to this desirable end. Massachusetts usually is not a laggard in any good work tending to the improvement of her citizens. I feel sure that she will not be in this instance, when once she comprehends its vast importance. As an individual, I take the ground that it is not only the bounden duty, but it is of the highest sanitary, as well as moral, importance to the State, to adopt any feasible method for more thoroughly dealing with intemperance. This vice so saps the health of individuals and of their progeny, that, as a sanitary measure, inebriate asylums could be urged upon the notice of the State with as much reason as common public hospitals were formerly demanded as public necessities.

As a matter of economy in the expenses of the State, the establishment of these hospitals might be urged. A very large proportion, now in our almshouses, are there, either directly or indirectly, in consequence of drunkenness. They are there, and virtually left to themselves. No one seems to care for them; no one endeavors to lift them up, and to raise them to a proper self-respect, and to the beauty of a life of temper-

* Fourth Annual Report of the managers of the New York Inebriate Asylum, Albany. 1874, page 5.

† The following list comprises, it is believed, all the permanently organized Inebriate Asylums in this country. Some smaller ones may exist, of which I have no information. 1. At Binghamton (New York State Asylum). 2. New York City Asylum (under Board of Charities of the city). 3. King's County Home for Inebriates, Brooklyn, N. Y. 4. Maryland Asylum, at Baltimore, Md. 5. The Sanitarium for the Treatment of Inebriates, at Media, Pa. 6. Washingtonian Home, Chicago, Ill. 7. Washingtonian Home, Boston. 8. Greenwood Asylum, under Dr. Albert Day (recently nearly destroyed by fire), at Stoneham, Mass.

ance. Consequently, they and their families are often left to regain an honorable status in society as best they may. By putting them into the hospitals I advocate, we shall not only support them, as we do now, but we shall restore a large percentage of them to the rank of honorable citizenship, and they and their families will become a part of the working force of the State, instead of being an incubus upon it, as they now are. And we shall gain these desirable ends without a much greater expenditure of funds than we now make for a comparatively futile purpose.*

Classification of Drunkards in Asylums.

Drunkards may be divided into different classes, needing different treatment. Doubtless each individual has his own peculiar character and tendencies. Hence, each drunkard should be managed so as to meet his peculiarities, in the same manner that physicians, while guided by general principles of action, have to adapt their treatment to each special case among their patients.

Among these classes of drunkards I will name the following :

Some have hereditary tendencies to the vice, and they are the most difficult of radical cure. The family taint seems at times to fairly overcome all efforts of the individual. Unless a great determination to become temperate be made by the drunkard himself, and the wisest course be pursued by the friends, such a person is doomed to spend a worse than useless life, disgraceful to himself and a source of endless sorrow to his friends. Others again seem to have periodic fits of an insane desire for drink. They will be perfectly sober and excellent men and women for several months, when suddenly, either from great sorrow, or some more trivial cause, or from helpless subjection to instinct, the liquor is seized upon to "drown care." The poor wretch then makes himself a brute for several days or weeks, until generally the stomach loathes all food ; and even the liquor, previously gloated upon, becomes wholly distasteful. Not infrequently the attack terminates in that state called in common language "the horrors." Nothing

* We refer to the Appendix to this paper for ample confirmation of the propriety of establishing inebriate asylums on economical as well as moral grounds.

can be more pitiable than the condition of a human being when reduced to this dire extremity. Trembling in every muscle, his wild face is the fair index of the mind. He is no longer the drivelling idiot, but a "horror"-struck maniac, urged by terrible dreams in which, perhaps, his best friends seem acting the part of fiends, while their gentlest movements to overcome his terror appear to him brutal attacks upon his liberty or life. He trembles, and flies affrighted from imaginary demons who are pursuing him. He is in hell, even when surrounded by loving attendants, who vainly endeavor, by caresses, to soothe him in his fright. I wish I could, like the Spartans of old, introduce every young drinker into the presence of a poor wretch when in the height of a paroxysm of delirium tremens; and, if the youth did not become a temperance devotee from that moment, he would not be moved by any argument. If he could be persuaded to act as an attendant through these few days of horror, and vainly endeavor to restrain the wild delirium; if he could see the fear manifested by the victim, and watch the sudden approach of death, or the slow process of cure with entire prostration of physical and intellectual powers, the lesson would, I am sure, be a good one.

A third class, from want of an early training in a manly temperance, or from evil companionship, fall into habits of intemperance. By temperance, in this climate and country, I mean total abstinence in childhood, and only the occasional use of wine in youth, when need of body requires it, and in subsequent life, the more frequent, but still moderate, use of alcohol when health or strength call for it.

Again, it is essential, in any definition of drunkards, for the purpose of ulterior treatment in asylums, to consider the relative amount of culture and refinement, or the reverse, among the different classes. I know that we are accustomed to consider all men as equals in this country; and yet, save in God's presence, and before human law, where all have equal rights, there never was a more flagrant abuse of terms, or a greater falsehood laid down. Of all persons born into this world, no two are exactly equal, physically, intellectually, morally, or in the surroundings of their birth. These facts have immense influence on all subsequent development, from

the cradle to the grave, and they must be considered, in any arrangements to be made, in the treatment of drunkards.

Finally, the intemperate may be divided into two more classes, viz.: those who, being fully aware of their desperate condition, have made up their minds, and are anxious to use any and all means for a radical cure; 2d, another class who, though aware of their degradation, have not the moral courage to withstand temptation, or who brutally refuse to leave off drinking. Taking either of these categories of drunkards, let us see what is necessary to meet their necessities, in an asylum for their cure.

I think arrangements could be made in inebriate asylums, as at all hospitals, for private apartments and public wards. Out-of-door arrangements, such as farm work, and work in mechanic shops, or the more quiet pleasures of intellectual pursuits, are likewise called for.

It seems to me that at least one asylum should be forthwith erected, or adequately endowed, by this State. Eventually, when the ideas connected with such a building become more thoroughly digested by the people, we shall need more, in order to classify the inmates; certainly, so far as to partially, or perhaps wholly, separate those who voluntarily seek the asylum from others who are compelled to go there by law. I think, still further, that it would be advisable to allow those able to pay for larger and more commodious apartments, and fuller attendance, to do so, in the same way as the McLean Asylum provides the "Appleton Ward." In this way we could give a more home-like feeling to some persons than can possibly be obtained in a large ward. I should hope, however, that in every asylum there would be an opportunity for all to meet on a common ground of the lecture room, the church, the library, and reading-room. I should wish for this amount of intercourse, because I would have the asylum, as much as possible, like the world at large, save in one particular, viz., there should be such a total abstinence from liquor as would gladden the heart of the warmest friend of prohibition. I would scarcely ever use alcohol in any form, even medicinally, and as a lotion, and never (if possible to avoid it with safety to human life) should it be taken internally, within the walls of an inebriate asylum.

Sites for the Asylum.

They should be in the interior of the State, in a fertile spot, where farming would be possible and easy. They should be removed from the noises and temptations of the city, but easy of access by rail. The grounds should be extensive, and well laid out in roads, bridle, and foot paths. They should have woods near or upon them. The sites should be, if possible, among the most beautiful and healthful in the State; they should command extensive views, so that the first sight that would greet the eyes of the inmates, with every morning light, should be such as to excite pleasant and grateful thoughts. The houses should be commodious, of medium size, and not expensively or luxuriously built. They should be airy, and bathed in sunlight all day long; ample space should be afforded by them for walking and exercise in all weathers, by means of piazzas, or covered corridors, carriages, etc. These sites should be recommended, as by law now provided that all sites for public institutions should be, by the State Board of Health, with especial reference to the various sanitary conditions best fitted for mind and body. In a word, I would have every arrangement in and outside of the houses so made as to produce cheerfulness and brightness. A tranquilizing, but not sad, influence should permeate and surround the whole.

Employments of the Inmates.

A large farm should be connected with each institution. This should be under the direction of an experienced farmer, who should ask the services of volunteers, or should require of non-paying inmates, whether voluntary ones or those put there by law, a certain number of hours of work each day. This work would be beneficial to the worker, and while it would produce a certain amount of the food for the establishment, it would also aid in the proper discipline of the inmates. Immediately around the house should be planted flower-beds, similar to those seen everywhere in England, which, kept in order by the inmates, would contribute much to the pleasure and healthful activity, if not actual profit, connected with the house.

Work-Shops.

Work-shops, in which carpentering, joining, painting of all kinds, and turning in iron and wood, could be carried on, should be in constant operation. They should be the general repair-shops for the institution. Of course, skilled workmen should superintend; but the object being to afford interesting work to inmates, all should be urged to avail themselves of the privilege of more or less active work therein afforded. Those who by law may be confined should be required to labor, and might be taught some useful trade, which would help support them on leaving the asylum. Amongst others, I should hope the printer's trade would not be neglected. A journal, published by the patients, would be one of the most effective means of pleasure and improvement for all.

Amusements.

There should be amusements of every kind; billiard rooms; bowling alleys should be open; base ball, cricket, foot ball, and croquet should be encouraged by the superintendent. The superintendent and his wife should likewise be persons capable of preparing evening entertainments, charades, whist-parties, readings, recitations, lectures and concerts. Occasional private conferences of the patients might be held, at which personal experiences might be told, in full confidence of the entire sympathy of all present; to these no outsider should ordinarily be admitted. Many a word of encouragement and of abounding hope might be given at these friendly meetings by those who have been through the "slough of despond," and may have overcome all difficulties. Some poor soul, still struggling with the trials attendant on a weak nature, and while staggering almost in despair of ever reaching any sure foot-hold, from which to begin anew the work of life, would gain at such meetings the requisite courage and strength. If possible, I would have a band of music from among the residents, led by an experienced music-teacher. An adult school should be open daily for the instruction of those ignorant of the common rudiments of learning. Assistants in this school, as teachers, I should expect would be sometimes found among the patients. A wise superintendent

would gently but earnestly urge this duty of teaching upon those of the inmates who have better cultivated minds, placing it upon the high ground of mutual benefit, to the teacher and taught; for surely no employment tends more to develop the intellect and all manly qualities, than self-forgetful instruction given to those less wise than ourselves. The name of teacher, Agassiz considered the highest title he could assume.

Superintendent.

This man should be of a large and high-toned nature. He must be able to look upon all the inmates, however degraded they may be at entrance, as fellow-mortals, born under the same laws as those which brought himself into existence, and therefore his own self-respect should lead him to treat those committed to his charge with respect as well as with authority. He should do all his work under a solemn sense of responsibility to God and to man; he should be no bigot of a sect. He should not try to proselyte to certain dogmas of belief, but to gently lead all to temperance. His object should be to induce all under him to act up to that inner light that dwelleth in every human being, and which tells him that an honest, true and temperate life is the only one worth pursuing. He should have a finely-cultivated intellect, and he should be in perfect health of body, otherwise his important duties would be likely to suffer.

Dyspepsia, or debility of mind or body, are always antagonistic to authority and to a true estimate of life in others. His presence should be a benediction as well as a power.

Such a man would have equal laws, but no tyranny. His word, having been once declared, under the best light he can get, would govern all with justice and mercy. No common man *could* take the place. He should be selected by trustees appointed by the governor and council, and be removable at the pleasure of the trustees, under whom he would act. We have very few in the community capable of taking the place; there are doubtless many persons who would seek the place for the salary, and for the gratification of a petty, though perfect, authority the office would confer.

If possible, a man who has had experience should be first selected, and his deputy, chosen or nominated by himself;

should be gradually initiated into all proper methods of conducting the establishment. The whole should be under the general direction of some non-political body of trustees, appointed by the executive of the State. Believing that the treatment of intemperance is one of the greatest subjects this Board can consider, and looking to the far future, rather than to the present, I think that the duty of superintending these establishments, and of nominating the proper persons to be resident superintendents, might, with propriety, be vested in the State Board of Health. I hold this opinion upon these, among other reasons, that might be adduced for this suggestion, viz. : First : that in the original Act establishing this Board, the legislature ordered the Board from time to time to report upon the uses of alcoholic liquors by the community, and for the prevention of intemperance ; and second : because by the same act the Board was directed to advise with the government on the selection of sites for public institutions ; and third : because by its constitution the Board will generally be removed from party politics and partisanship.

Attendants.

These should all be selected with especial reference to the moral rather than the physical objects of the place, and no one should ever be appointed to fill any place who was not fully alive to the high objects proposed, and hopeful of good from the general work of the institution.

As great care should be used in the selection of these persons as is now taken in the choice of attendants in hospitals for the insane. The superintendent should nominate them to the trustees, and should be held strictly responsible for their good behavior.

Religious Instruction and Worship in the Place.

I would have services at certain periods, conducted by clergymen of the various denominations, or by laymen. No dogmas should be preached, but the sole object should be to lead the inmates to a proper self-respect, by raising in each a lively sense of his own responsibility to God and to mankind for the proper care of his own body, by living a temperate life ; even this latter point should be rather indi-

rectly than directly advocated. For I would not willingly offend by a religious act the self-esteem of a patient in the asylum. No one should be obliged to attend these services, and no one, for non-attendance, should suffer in the estimation of any one or have different treatment in consequence of such absence.

PENAL ASYLUMS.

In all I have thus far suggested, I have supposed an institution in which the inmates have rather a voluntary than a forced residence. It may be asked, how I would manage those incorrigible, brutal drunkards, who go to the place from no will of their own, but simply when forced to do so by the arm of the law. It is evident that, at first, it will be necessary to use more restraint, but even with these poor wretches I hope that an able and skilful superintendent would soon be able to relax all penal arrangements. Especially could this be done if the court, when sending the victim to the asylum, should let him distinctly understand that if he attempt to escape, without permission, or behave in a manner unbecoming the institution, he will be summarily sent to a house of correction, or otherwise more severely treated.

ASYLUM ACCOMMODATIONS FOR WOMEN.

In my preceding remarks I have, while considering chiefly asylums for men, made many suggestions that are equally applicable to institutions, or parts of institutions, which would be devoted to the treatment of females. Of course the superintendent of a female institution or department of a general asylum should be a woman. Some modifications of employments would likewise be necessary, but the general principles of treatment of the male and female drunkard would be identical.

REPORTS.

Annual reports to the legislature should be made by the trustees early in the legislative year, with statements of finances, and of all other points of interest naturally connected with such an institution.

CONCLUSION.

I have thus, gentlemen, given you my sincere convictions of what the State ought to do in one direction, at least, toward stemming this frightful evil of intemperance, which, although perhaps less diffused than formerly, and certainly not permitted by society as it was formerly, is nevertheless an evil of the greatest magnitude in Massachusetts. I sincerely hope that the Board will unite with me in advising the legislature to enter upon this plan of reformation. The idea, I trust, will also commend itself to all citizens. No one, even if he be a temperate or intemperate user of liquor or a strictly total abstainer, can object to this, which has been proved to be a feasible plan for curing the real drunkard.

Finally, I would suggest for your consideration the following resolution :—

Voted, That this Board earnestly and unanimously recommend to the legislature, as a sanitary measure of the highest importance, the establishment or endowment of one or more inebriate asylums or hospitals.

I remain, very faithfully,

Your friend and colleague,

HENRY I. BOWDITCH.

APPENDIX

TO THE PAPER ON INEBRIATE ASYLUMS.

INTEMPERANCE AS A CAUSE OF PAUPERISM.

In December last, circulars from the Secretary of the State Board of Health were sent to the overseers of the poor of this Commonwealth, requesting answers to the following questions, and any other information on the subject involved in them, in order to complete investigations being made by the Chairman of the Board, Dr. Henry I. Bowditch.

1. What proportion of the inmates of your almshouse are there in consequence of the deleterious use of intoxicating liquors?

2. What proportion of the children in the house are there in consequence of the drunkenness of parents?

The number of cities and towns in the State is 341, and replies have been received from 282.

First Question.

Fifty towns are without almshouses, supporting their poor in those of other towns, or in private families. Eighty towns report none of this class as inmates. The following are the results derived from the reports of the remainder.

Adult inmates directly and indirectly from this cause. Results from fifty-one towns.

Whole number of inmates,	445
From this cause,	192
From other causes,	253

Proportion reported by these fifty-one towns.

Highest,									$\frac{11}{11}$
Lowest,									$\frac{1}{11}$
1 town,	$\frac{11}{11}$	5 towns,							$\frac{1}{11}$
1 "	$\frac{9}{11}$	3 "							$\frac{3}{11}$
3 towns,	$\frac{3}{11}$	2 "							$\frac{2}{11}$
1 town,	$\frac{4}{11}$	1 town,							$\frac{1}{11}$
1 "	$\frac{10}{11}$	2 towns,							$\frac{2}{11}$
1 "	$\frac{13}{11}$	2 "							$\frac{2}{11}$
8 towns,	$\frac{1}{11}$	2 "							$\frac{1}{11}$
1 town,	$\frac{8}{11}$	2 "							$\frac{1}{11}$
1 "	$\frac{7}{11}$	2 "							$\frac{1}{11}$
1 "	$\frac{6}{11}$	1 town,							$\frac{2}{11}$
1 "	$\frac{4}{11}$	1 "							$\frac{1}{11}$
6 towns,	$\frac{1}{11}$	1 "							$\frac{1}{11}$
1 town,	$\frac{1}{11}$								

Average percentage of adults from this cause, 35+.

Almshouses having only adult inmates, and reporting only the proportion from this cause. Thirty-five towns:

Highest,									$\frac{11}{11}$
Lowest,									$\frac{1}{11}$
1 town,	$\frac{12}{11}$	5 towns,							$\frac{1}{11}$
1 "	$\frac{10}{11}$	5 "							$\frac{1}{11}$
2 towns,	$\frac{2}{11}$	1 town,							$\frac{2}{11}$
3 "	$\frac{3}{11}$	4 towns,							$\frac{1}{11}$
2 "	$\frac{4}{11}$	1 town,							$\frac{1}{11}$
5 "	$\frac{1}{11}$	2 towns,							$\frac{2}{11}$
1 town,	$\frac{4}{11}$	2 "							$\frac{1}{11}$

Average percentage from this cause, 40+.

Reports from almshouses of fifty-seven towns, giving only the proportion, from this cause, of all inmates, both adults and children.

Highest,									$\frac{49}{57} = 92$ per cent.
Lowest,									$\frac{1}{57} = 4.8$ per cent.
1 town,	$\frac{49}{57}$	10 towns,							$\frac{1}{57}$
1 "	$\frac{9}{57}$	1 town,							$\frac{6}{57}$
2 towns,	$\frac{7}{57}$	1 "							$\frac{2}{57}$
1 town,	$\frac{8}{57}$	1 "							$\frac{3}{57}$
5 towns,	$\frac{4}{57}$	1 "							$\frac{2}{57}$
5 "	$\frac{2}{57}$	4 towns,							$\frac{1}{57}$
1 town,	$\frac{11}{57}$	1 town,							$\frac{1}{57}$
1 "	$\frac{10}{57}$	6 towns,							$\frac{1}{57}$
4 towns,	$\frac{1}{57}$	1 town,							$\frac{1}{57}$
1 town,	$\frac{21}{57}$	1 "							$\frac{1}{57}$
2 towns,	$\frac{6}{57}$	1 "							$\frac{1}{57}$
3 "	$\frac{1}{57}$	1 "							$\frac{1}{57}$
1 town,	$\frac{11}{57}$								

Average percentage, 41.

Answers not proportional.

9 towns report "one."	1 town reports "all, i. e. one."
3 " " "two."	1 " " "all, i. e. two."
1 " " "five."	1 " " "all."
1 " " "probably ten."	

Seventeen towns. Number reported by sixteen towns,—33."

Second Question.

90 towns report,	No children in house.
86 " " " " " " " "	"None" from this cause.
27 " " " " " " " "	"All" " " " "

Thirty-three towns report one hundred and forty-five such children.

From drunkenness of parents,	105
" " " both parents,	23
" " " father,	17
Total,	145

Proportional Answers.

Fourteen towns. Highest, $\frac{4}{5} = 98$ per cent. Lowest, $\frac{1}{3} = 33$ per cent.

1 town,	$\frac{4}{5}$	3 towns,	$\frac{2}{3}$
1 "	$\frac{1}{2}$	1 town,	$\frac{1}{3}$
1 "	$\frac{1}{10}$	1 "	$\frac{1}{3}$
1 "	$\frac{1}{11}$	1 "	$\frac{1}{3}$
1 "	$\frac{1}{12}$	1 "	$\frac{1}{3}$
1 "	$\frac{1}{13}$	1 "	$\frac{1}{3}$

Average percentage, 72.9.

TOWNS HAVING NO ALMSHOUSES.

First Question.

Proportional answers, five towns. Highest, $\frac{1}{2} = 50$ per cent. Lowest, $\frac{1}{6} = 16.7$ per cent.

2 towns,	$\frac{1}{2}$	1 town,	$\frac{1}{6}$
1 town,	$\frac{1}{4}$	1 "	$\frac{1}{6}$

Average percentage, 35.8.

One town reports as supporting no children, and proportion as $\frac{1}{2} = 40$ per cent.

Eight towns report twenty adults, viz.:

3 towns, "one"	3	1 town, "five"	5
3 " "two"	6	1 " "six"	6
			20

One town "all," one town nearly "all." One town as lodging and feeding ten "tramps," or vagrants, per diem.

Second Question.

Proportional answers, three towns. One town $\frac{1}{3}$; two towns $\frac{1}{2}$; average 62.5 per cent.

Nine towns report thirty-five children, viz.:

2 towns, 3,	. . . . . 6	1 town, 1,	. . . . . 1
1 town, 10,	. . . . . 10	1 " 6, "all "	. . . . . 6
2 towns, 2,	. . . . . 4	1 " 5,	. . . . . 5
1 town, 3,	. . . . . 3		—
			35

One town "all." One town "none."

Outside Aid.

By towns having almshouses .

First Question.

Proportional answers, including adults and children. Six towns

1 town,	$\frac{9}{10}$	1 town,	$\frac{1}{10}$
1 "	$\frac{2}{3}$	1 "	$\frac{1}{3}$
1 "	$\frac{2}{3}$	1 "	$\frac{1}{3}$

Average percentage, 71.4.

1 town reports, . . . 5 parents | 1 town reports, . . . 3 persons

Second Question.

Proportional answers. Four towns.

1 town,	$\frac{9}{10}$	1 town,	$\frac{1}{10}$
1 "	$\frac{2}{3}$	1 "	$\frac{1}{3}$

Average percentage, 61.6.

1 town reports,	. . . . .	4 child.en.
1 " "	. . . . .	12 "
1 " "	. . . . .	6 "
Total,	. . . . .	22 "

Particular Answers by Towns.

Bernardston.—No. 1. One-fourth of the number and nearly half the expense chargeable to whiskey.

Boston.—Nos. 1 and 2. Deer Island Almshouse and Hospital. I would answer the above (the two questions) by saying to the best of my knowledge and belief per 90 cent. to both questions.

Our register shows that full one-third of the inmates received for the last two years are here through the direct cause of drunkenness. Very few inmates (there are exceptions) in this house but what rum brought them there. Setting aside the sentenced boys (sent here for truancy, petty theft, etc.), nine-tenths of the remainder are here through the influence of the use of intoxicating liquors by the parents. The great and almost the only cause for so much poverty and distress in the city can be traced to the use of intoxicating drink either by husband or wife, or both.

Chelsea.—No. 1. We have no almshouse, but are of opinion that fully one-half of those we aid as paupers become so by reason of using intoxicating liquors as a beverage.

No. 2. The same answer can be given to this question.

Chesterfield.—No. 1. Seven-eighths of all the inmates of our almshouse are there in consequence of the deleterious use of intoxicating liquors, directly or indirectly.

No. 2. There is but one child that cannot be traced to intoxicating liquors.

Chicopee.—No. 1. Nineteen out of twenty. If it were not for intoxicating liquors, we should not need any almshouse.

No. 2. Forty-nine out of fifty.

Danvers.—No. 1. We have no almshouse in Danvers. Our poor are mostly supported in private families. About one-sixth of our poor are made paupers by intoxicating liquors.

No. 2. One-half of our children are a town charge in consequence of the drunkenness of their parents.

Dedham.—No. 1. We have fifteen in our almshouse, and *three-fourths* of the whole *at least* are there in consequence of the use, by themselves, or others on whom they should have depended for support.

No. 2. The same proportion will apply to all the children, and I think more. The same rule will hold good to all the poor *outside* the *almshouse*, and leave a margin, I fear.

Fairhaven.—No. 1. All are directly or indirectly there on account of the use of intoxicating liquors.

Gardner.—No. 1. Nearly one-half.

No. 2.—Whole number that we have had at our almshouse.

Gloucester.—No. 1. We have had in our almshouse this year forty-six inmates,—thirty-two adults and fourteen children. Twenty-six of the adults were there in consequence of the use of intoxicating liquors.

No. 2. All the children, fourteen in number, that are there and have been there for 1874, were there in consequence of drunken parents.

Out of about two hundred applicants for outside relief during the year, fifty per cent. of them were made poor directly or indirectly by the use of intoxicating liquor.

Hancock.—No. 1. There has been no public sale of liquors in Hancock for several years, and we therefore have no paupers and no almshouse.

Haverhill.—No. 1. We have had fifty-three at our almshouse the past year; forty-nine are there directly and indirectly from intoxicating liquors. Thirty-two directly and four from other causes besides liquors.

No. 2. We have had eight families at our almshouse with children, seven on account of intemperance, one from other causes. Twelve children out of fifteen are there from drunken parents, both father and mother.

Huntington.—No. 1. We have no almshouse, but we have to aid some every year whose poverty is partly or wholly chargeable to intemperance. We have three persons who are partly chargeable to intemperance now.

No. 2. Two of the three above named are children. We have but five who are wholly chargeable now.

Number of persons, in 1873, who pay a poll-tax only, is ninety-one. Number in 1874 is eighty-five.

Lexington.—No. 1. There are seven adults in the house, four in consequence of intemperance.

No. 2. There is but one child in the house, and that one is owing to the intemperance of both parents.

We are furnishing aid to five parents and twelve children outside of house, intoxication being the cause.

Ludlow.—No. 1. Hospitals, almshouses, prisons, we have none.

Lynnfield.—In my experience as an overseer of poor for more than twenty years, I find a large percentage of those brought to the necessity of help from the town to have been caused by the use of intoxicating liquors. I am also happy to add, that in the country towns, the children of those parents who have been so unfortunate as to need such assistance, through the influence of our schools and the changes in the customs of society, are being educated up to a moral standard which promises a better future and less pauperism.

Methuen.—No. 1. There are now in the almshouse in this town thirteen inmates. Nine belong to one family, which is there temporarily in consequence of the drunkenness of the father. The remaining inmates (four) are not there in consequence of the deleterious use of liquors.

No. 2. All.

In my five years' experience as overseer of the poor, I should not estimate the number of paupers fully supported by the town of Methuen, who became so by the excessive use of intoxicating liquors, as more than one-fourth.

Milford.—Nos. 1 and 2. At this date (Dec. 14, 1874), there are in our poor-house nine men, eight women, and eight children. Of the nine men, seven are habitual drunkards, two made paupers by drunken sons, who have spent the property of their fathers, and made them paupers. Of the eight women, one is a drunkard, four others had drunken husbands, one a drunken father, the other two we cannot find out, not being able to get their parentage. Of the eight children, four have drunken father and mother, two drunken fathers; the other two have temperate parents. Of the two hundred and fifty-eight persons partially aided Sept. 1, 1874, we can find but eight persons who do not owe their poverty directly or indirectly to the use of intoxicating liquors.

Milbury.—No. 1. Three-fourths of them.

No. 2. We have no children at almshouse at present, but all that we have had in the past, to my knowledge, have been on account of drunkenness.

Monroe.—We have no almshouse in town and no drunken inmates. No paupers in town that I know of.

Montgomery.—We have no almshouse in the town of Montgomery, but three-sevenths of our paupers were made so from liquors.

New Ashford.—This town has but one pauper at present, seventy-six years of age; he has been a drunkard for more than fifty years; his son is a drunkard, and his grandson is ditto.

Norbury.—We have no almshouse, but those that are partially supported, and about one-half of the fully supported, are all caused by intoxicating liquors.

Norfolk.—Fortunate for our town, we have no almshouse, nor house where liquor may be obtained, but will give this testimony: have never examined any case of pauperism as to its cause but found drunkenness as a family disease.

Pittsfield.—No. 1. About one-half.

No. 2. We have no children in our almshouse except from drunken parents.

Raynham.—No. 1. The only two *fully* supported by the town, and one-third of those partially supported.

Richmond.—No almshouse, no town paupers for the last three years. We have from one to ten vagrants or "tramps" each night, and many of them show the effect of liquor.

Rowley.—I have been overseer of poor thirteen years, and think six-eighths of our pauper expense is caused by liquor, directly or indirectly.

Russell.—No. 1. There is no almshouse in Russell, but most of those supported become paupers on account of liquor.

No. 2. Three-fourths.

I believe that tobacco in all its forms has more to do in making men intemperate and drunkards than any other cause. Drinking generally follows the using of tobacco. Boys commence young in using it, and drinking soon follows.

Sandwich.—Of one hundred and forty-nine persons aided out of almshouse (sixty-four adults and eighty-five children), fifty-five are paupers from intemperance (twenty-eight children and twenty-seven adults). Not all the adults were themselves intemperate, being widows and wives whose husbands are or were drunkards.

Springfield.—No. 1. There are thirty-one adults in our almshouse, and twenty-one were brought there by intemperance.

No. 2. There are fourteen children, and thirteen in consequence of drunkenness.

In addition to circular, I would say that we have lodged and fed eight thousand and fifty-two persons that we call "tramps," and I can seldom find a man among them who was not reduced to that condition by intemperance. It is safe to say nine-tenths are drunkards, though we have not the exact records; also our records show that we have aided outside the almshouse four hundred families, one thousand one hundred and twelve persons, out of which one hundred and twenty-five families, four hundred and forty-three persons, were brought to destitution by intemperance.

Stockbridge.—No. 1. We have no almshouse, but one-fifth of our paupers are supported because of such use.

Stoughton.—No. 2. None just now, but during the past year one hundred per cent.

Wakefield.—We have at the present time fourteen inmates of our almshouse. Of these, nine were brought there directly by the use of intoxicating

liquors. Of the remaining five, three were so weak mentally as to be incapable of supporting themselves, but whose condition was aggravated by the use of spirituous liquors. In short, of the whole fourteen, there are but two entirely free in this respect, while nine of the number were reduced to their present condition by this pernicious habit.

Wales.—We have no almshouse, but we have one pauper that has been supported by our town over forty years in consequence of the intemperance of her husband; and a son of these parties is supported at the Northampton Hospital for the Insane, brought to his present condition on account of his own and his father's intemperate habits. We have supported him about fourteen years.

Westfield.—No. 1. There are two aged men, both in consequence of intoxicating liquors; seven women; four of the husbands died drunkards.

No. 2. Three idiotic boys; their fathers are drinking men.

West Newbury.—No. 1. One-eighth part of the inmates of our almshouse for the past year were there in consequence of excessive use of intoxicating liquor, and that part indirectly.

Winchester.—Am sorry to say that, of all that receive aid from this town, four-fifths are themselves addicted to the over-indulgence of intoxicating drink, or are the families of such. Of the seven that receive full support from the town, three are confirmed inebriates, one widow of an inebriate, two are children of a drunken father, and one from disability not caused by drink.

Winthrop.—We have no poor.

Worcester.—No. 1. From October 1st, 1873, to October 1st, 1874, there were in our almshouse ninety persons in all, and forty-six of them were sent there from the effects of intemperance.

No. 2. We have in our almshouse seven children, all of whom are there from the cause of drunken parents.

Think can safely say from records of overseers of the poor, that fully forty per cent. of the disbursements of the almoner of the board have gone to sustain drunken families. We have about fifty thousand inhabitants, and near fifteen thousand are foreigners, mostly Irish and Canadians.

State Institutions.

South Boston (School for Idiotic and Feeble-minded Youth).—No. 1. Probably one-third in consequence of the indirect effect of the habitual use of strong drink.

No. 2. The parent or parents of one-sixth are *avowedly* drunkards. The real proportion is much higher—I should say one quarter.

Bridgewater (State Workhouse).—No 1. Two-thirds.

No. 2. One-third.

Charlestown (State Prison).—No. 1. About eighty five per cent.

Lancaster (Industrial School).—No. 1. About five per cent.

No. 2. About seventy-five per cent.

Northampton (State Lunatic Hospital).—No. 1. Patients admitted from December 30th, 1873, to October 1st, 1874 (one year): men, one hundred and five; women, eighty-eight; total, one hundred and ninety-three. Intemperance alleged as the cause of insanity: men, twenty-one; women, three; total, twenty-four. Of at least one-half of our patients we obtain no full and reliable history. I think it would be fair to assume intemperance as the main cause in at least twenty-four cases more.

Taunton (State Lunatic Asylum).—No. 1. Without going into close calculation I should say, one-fifth; certainly as many as that if you include those where the use of intoxicating liquors is conjoined with other causes as hereditary predisposition, trouble, etc.

Tecksbury (State Almshouse).—No. 1. Our physician says three-fourths.

No. 2. Don't keep any record by which we can ascertain.

Westborough (State Reform School).—No. 1. Two-sevenths.

No. 2. One-half plus.

Worcester (State Lunatic Hospital).—No. 1. Five per cent. are attributed to intemperance, and in a few other cases intemperance doubtless was one of the causes. Of eight hundred and seven patients admitted during the last two years, just ten per cent. were caused by intemperance, and in a few others intemperance may have aided.

STATE WORKHOUSE, BRIDGEWATER, Dec. 14, 1874.

CHAS. F. FOLSON, M. D., *Secretary of State Board of Health.*

DEAR SIR:—Your circular is just received. My answer to your questions must of necessity partake largely of "guesswork." The prisoners at this institution are rather of the mild type of criminals. Most of them sentenced on such charges as the following, viz.: "Idle and disorderly," "Vagrant," "Common drunkard," "Lewd, wanton, and lascivious." The first class, "Idle and disorderly," comprise I think two-thirds of the whole. The children that are here, sixty in number, are mostly illegitimate—were born here of mothers who were sentenced for being "lewd." From information received of the inmates themselves, I should say seven-eighths of the adults were in the habit of using liquor to excess.

I have answered your questions somewhat at random, but think I am not much out of the way.

Yours truly,

N. LEONARD, Jr., *Supt.*



THE VALUE OF HEALTH TO THE STATE.

By W. E. BOARDMAN, M. D.
(Of Boston).



THE VALUE OF HEALTH TO THE STATE.

In general terms, health is defined as that condition which results from the harmonious relations and painless operations of the organic functions of the human system, and enables us readily to accomplish the ends of life. Disease, too, is a product of organic functions, but of those whose harmony of relation and insensible operations are interfered with. Health and disease, like the conditions implied by the terms strength and weakness, are not simple entities, but they are exceedingly complex, variously derived, comparative conditions. No one is absolutely well, nor is any one diseased in all respects, but every one is more or less healthy or diseased. Our estimate of the degree of health or sickness is founded upon the extent to which our capabilities for performing the ordinary duties of life, during our natural existence, are interfered with.

Since, then, the value of a life depends upon its accomplishments, and these again upon its capabilities, the value of health to the individual is self-evident. It is a fact, however, which ought to be understood and appreciated by every one, that it is not alone from his own good health that the individual derives benefit, for the well-being of his neighbors and associates, likewise, is the source of many, and oftentimes of far greater advantages to himself.

Public health is merely the general term for the health of large aggregations of persons, as distinguished from that of the individuals; but, at the same time, it is the expression of the totality of the individual conditions. If we apply, then, the same reasoning in our estimation of the value of a corporate body, an analogy which cannot be disputed, it appears

that the prosperity of a town, city, state or country stands in immediate relation with its sanitary condition. It is obvious, therefore, that there exists a community of interest between the individual and the State of which he forms a part; and, while the latter is required zealously to watch over all the conditions of the health of its members, as the basis of its corporate prosperity, the individual ought always to seek the promotion of the well-being of himself and neighbors, as an essential condition of his own welfare.

This mutual relation, in respect of health, between the individual and community was recognized, more or less, even in the remotest ages, a fact which is attested by the fables of mythology, by history, both sacred and profane, and, above all, by the impressive stories which are told by the ruins of Babylon, Jerusalem, and ancient cities of Greece, Egypt, and Italy, wherein are found monumental works which rival the products of modern sanitary engineering, and point to the fact, that those nations which attained the highest civilization and wielded the greatest influence over their contemporaries always exercised a careful guard over their health. In succeeding ages, when civilization declined and the unwritten period of barbarism was inaugurated, all hygienic laws were put to defiance in the general destruction which prevailed; and the sanitary lessons of previous ages were lost, to be recalled in a measure only, in the subsequent middle ages, when terrible epidemics cut off one-fourth of the population of Europe, and, again, more forcibly, in the following centuries of luxury and squalor. In later years, when civilization has made such great advances, crude hygiene has developed into the more comprehensive study of the laws of disease as they affect large masses of human beings. Innumerable expedients have been adopted for the amelioration of disease and the improvement of health. The greatest minds have been devoted to the investigation of the origin of diseases, and inventive genius has been stimulated to the utmost. Yet, to-day, we can hardly do more than did the ancients; namely, endeavor to keep clean, or, following the counsel of the wise Hippocrates, provide for pure air, pure water, and a pure soil.

While, therefore, to-day, as in all ages, the problem of health finds its solution, in a great measure, in the observ-

ance of simple cleanliness, it is in the benefits which are derived from the more general application of this principle, that we observe the results of modern thought and resources, of recent improvements in the means of communication, and of the more general intercourse which prevails.

Humanity alone, which finds its expression in the Christian law, "Thou shalt love thy neighbor as thyself," is and ought to be a most potent influence in favor of the promotion of the public health; but, in its practical application to communities, sanitary science comes into constant contact with personal convenience, avarice, mistaken economy, long-established customs and habits and an erroneous judgment of the future by the favorable condition of the present and the past. Hence has arisen the necessity of educating the people up to the point of recognizing the community of interest which exists between the individual and the State, and which cannot be promoted except by the general supervision of competent authorities invested with proper powers.

As a contribution to this education of the public, this paper has been prepared, with the view of showing that, in promoting measures for sanitary improvement, a town, city or state, and the like, practises true economy, nay more, creates and invests a capital which will return a high rate of interest.

It is the good fortune of many persons that they do not lose a single day in the year from sickness, while others lose weeks, months, and many the entire year. It has been truly said that it is hard to find a family in which every member is well. There is, at least, one invalid in nearly every household.

The general registration of sickness has not yet been attempted, though the value of such a course has repeatedly been urged of late. Statisticians, however, have furnished us with reasonable estimates for calculating the sickness-rate. They have shown that in Europe, every individual loses, on an average, nineteen to twenty days annually by sickness. English statisticians have estimated that, in that country, for every death there are two constantly sick; in other words, that every death implies a total average of 730 days of sickness.¹

The unfortunate experience of the health assurance com-

¹ Report of the Massachusetts State Board of Health, 1873, p. 346.

panies in this country demonstrated the fact that the amount of sickness or disability is greater here than it is in Great Britain, as was shown by Dr. Edward Jarvis in the paper contributed by him to the Report of this Board for the previous year. We may safely assume, therefore, the English sickness-rate in the following calculations for the State of Massachusetts.

In the Registration Report for 1872, a computation is made showing the mortality of the State, in six geographical divisions. In the first or metropolitan district, comprising the city of Boston, the rate of mortality was the highest. There were 8,088 deaths in a population of 250,526. Calculating 730 days sickness for each death, it appears that, during the year, each individual lost, on the average, nearly 24 days. In the sixth or western district, including Berkshire County, where the rate of mortality was the lowest, there were 1,234 deaths in a population of 64,827, which would represent an annual loss to each person of only about 14 days by sickness. In the whole State, during the same year, there were recorded 35,019 deaths, while the population was estimated at 1,541,542, which would give a total loss of 70,038 years, or nearly 17 days for each individual in the State. Computing in the same way for the State for eight years, from 1865 to 1872, inclusive, the following results are obtained. The average population was 1,400,522, and the average annual mortality was 26,813. There was an annual loss, therefore, of 19,573,490 days by sickness, 13.9 or about 14 days for each person; considerably less than obtains in Europe.

The correctness of the assumed sickness-rate, which is the basis of the preceding calculations, may be roughly demonstrated in the following manner. Since the opening of the Boston City Hospital, according to the annual report for the year 1873, there have been 22,927 patients admitted for treatment, of which number 1,917 have died, or about 1 in 12. In the Massachusetts General Hospital, a similar ratio prevails, and the same is true of all the state institutions, calculating only for those inmates who are classed as patients. During the year 1872, out of 36,053 patients admitted to the various hospitals of New York city, 3,274 died, or about 1

in 11. From the sixth report of the medical officer of the privy council, it appears that of 31,605 medical patients admitted to various hospitals of Great Britain and Ireland, about 11 per cent., or 1 in 9 died. From the same report it is found that, in Paris for a similar period, the ratio was 1 in 8 for the medical patients. One in 10, then, will be a fair expression of the usual ratio of deaths to cases admitted to hospitals. Any one, however, who has any knowledge of these institutions, will readily understand that this does not express the actual ratio of mortality and sickness which prevails among the classes of people who become the inmates of hospitals. It is known that large numbers are excluded from these institutions, in consequence of the limited accommodations which they afford, especially in this State, and on account of the restrictions as to the classes and conditions of disease which are admitted for treatment, chronic cases, as a general rule, being excluded; further, a very large number of persons receive treatment as out-patients and at various dispensaries, a large proportion of whom are temporarily prevented from pursuing their ordinarily avocations.

The fact that this estimate is exceedingly low may be illustrated more definitely by a comparison of the above ratio, which was found to obtain in British hospitals, with that which prevailed among the average number of troops serving in the United Kingdom of Great Britain and Ireland during the year 1872, as published in the Army Medical Report for that year, when the average ratio showed a considerable reduction as compared with that of the previous ten years. The average strength of the army was 92,218, of which number 72,236 were admitted to the hospital and 714 died, or about 1 in 100, though women and children do not enter into this estimate, and it is known that they contribute most largely to the sickness-rates in public and private records.

We may double our previous estimate, therefore, and assume the ratio of twenty cases of sickness, incapacitating from labor, to one death, and still be below the probable ratio, as will be evident from the succeeding calculations. Indeed, Dr. Playfair, of England, after careful inquiry, computed the ratio of one death to twenty-eight cases of sickness for a mixed population of all ages.

If, now, we estimate upon this basis for 1870, the year of the census, during which the mortality was comparatively low, it is found that 27,329 deaths were recorded in the whole State; hence there would have been 546,580 cases of sickness during the year, or only about four daily for each city and town.

In eight of the largest hospitals of Great Britain, the average duration of treatment of medical patients is 28.9 days, and of surgical patients 35.5 days. In the Boston City Hospital, during 1873, it was 23.2, and in the Massachusetts General Hospital 32.8 days, no distinction being made between the medical and surgical patients, in the reports of these institutions. Bearing in mind that these patients, as a rule, have been sick a few days before admission, and rarely resume their ordinary occupations until at least several days have elapsed after their discharge from the hospital, we may safely assume thirty-five days as the average period for which these patients are incapacitated by sickness.

Given, then, the number of sick persons and the average duration of illness, the result is a total annual loss of 19,130,300 days, which number, divided equally among the total population for the year 1870, would give 13.1 days for each individual, results which do not differ materially from that obtained by the first method of calculating.

It may be objected to these computations, that these periods do not represent the true loss of time, in a pecuniary point of view, from the fact that they apply to the whole population and not to the working portion alone. Admitting this to be a valid objection, a reduction in the above estimates may be made as follows.

From the United States Census Report of 1870, it appears that the total number of persons in the State, engaged in all classes of occupations, was 579,844 or about 39 per cent. of the entire population. Making use of our first estimate, then, by which we computed an average annual loss of fourteen days by each individual, during a period of eight years, and calculating for the working population alone, the original estimate would be reduced to 7,633,661 days, or 20,914 years, representing the total average loss of working-time by sickness during one year.

In the paper by Dr. Jarvis, to which reference has already

been made, a computation is made for the purpose of determining the approximate amount of sickness in this State, during the year 1870, among the people of the working age, twenty to seventy, from which it appears that the total period during which so much opportunity for labor was lost, was 24,553 years, 3,639 years more than we obtained by the above calculation. It will be evident, therefore, that our estimate is sufficiently low.

It is further shown by Dr. Jarvis, that, during the same year, the premature deaths represented a still greater loss to the productive power of the State, a matter of exceedingly great importance, the consideration of which, however, does not come within the scope of the present paper.

It would be impossible to obtain even an approximate idea of the actual cost of these millions of sick-days to the State. A low estimate, however, will be astounding to the many who have never taken the subject into consideration.

The following table, derived from the Fifth Annual Report of the Bureau of Statistics of Labor of Massachusetts,

[From U. S. Census Report—1870.]

Shows four classes of occupation, employing $41\frac{38}{100}$ per cent. of the males above sixteen years of age, $74\frac{65}{100}$ per cent. of the females above fifteen years of age, and $73\frac{86}{100}$ per cent. of the youth, of all employed in manufactures and mechanical industries, in Massachusetts.

BRANCH OF MANUFACTURE.	Number Employed.	SEX AND AGE.			Wages.
		Males above 16 years.	Fem. above 15 years.	Youth	
Textiles, . . .	72,464	27,256	36,409	8,799	\$23,656,614
Boots, Shoes & Leather, . . .	60,384	48,000	11,225	1,159	30,417,682
Straw Goods, . . .	11,441	1,113	10,003	925	1,411,350
Men's Clothing, . . .	9,878	3,031	6,730	117	3,815,742
Total, . . .	154,167	89,400	64,367	10,400	\$59,301,388

Taking into consideration the class of people indicated by this table, their numbers and the character of their occupations,

we may safely rely upon its affording a just estimate of the average wages which are received by the mechanical and manufacturing portions of the State; and, further, it will furnish a low estimate of the average receipts of the entire working population.

Dividing the total wages by the total number employed, it appears that \$7.40 represent the average amount received weekly by each individual; and, therefore, it may safely be assumed that one dollar per day will denote the minimum loss in wages to those who are disabled by sickness.

But the loss of pay is not the only tax imposed upon the sick, for they necessarily incur greater or less expenses for medical attendance, medicines, nursing, etc., while the ordinary expenses of living, for the individual or household, must still be provided for.

An idea of these expenses may be obtained by reference to the cost of maintaining hospitals, where the large numbers of patients reduce the average expenses; at the same time, there are no charges for professional attendance, and in the estimates, no account is taken of the interest on the investments in land, buildings, etc. A review of the expenses attending the conduction of the two large hospitals in the city of Boston, shows that the average cost of each patient is over nine dollars per week; while, for all the state institutions, the average cost of each inmate, during 1872-3, was about three dollars per week; but a large number of these inmates are not sick; and, furthermore, many of them contribute, in various ways and largely, to the support of the institutions, while the general expenses for management and supplies, obviously, are much less than is the case in hospitals.

With reason, then, two dollars, per day and individual, may be regarded as the minimum average cost of sickness to the working-people, in this State, from loss of wages and the attending expenses. If, now, the number of working days lost annually, be multiplied by two, it is found that the total annual loss to the State, by sickness alone, at the lowest calculation, is \$15,267,322; and if we compute in the same way for the entire population, this amount would be increased to an average of \$39,146,980.

When we consider the amount of misery and suffering

which these statements imply, both in a moral and physical sense, and the prevalence of pauperism and crime, which are directly traceable to the paralyzing influences of debt incurred by sickness, humanity alone must utter its loudest protest against the existing condition of sanitary matters, which is responsible for such a destruction of the moral, vital and productive energy of this State; but it is our present object to show that it is the interest, as well as the duty, of each and every one to endeavor to diminish the excessive rate of sickness and mortality:

Naturally, the question arises, Is it possible to accomplish this end in our State? Natives and citizens of Massachusetts are wont to boast of its high attainments in literature, the arts and sciences. In education, wealth, general industry, philanthropy and charity, we can claim, at least, to be the peer of any of our sister States. Does our sanitary condition, as indicated by the mortality, place us in an equally favorable light? The following observations will serve to show that, in the matter of health, there is opportunity for improvement, and, further, that a change for the better is possible.

From the United States census report for 1870, it appears that, with the exception of Arizona and Louisiana, the death-rate of Massachusetts, for that year, was higher than that of any other State in the Union. A comparison of this nature, however, obviously leads to no definite conclusion, for many permanent causes of disease come into play, in the different States, to increase or diminish the amount of sickness and mortality; and, further, it is to be remembered that the density of population in Massachusetts, about one hundred and eighty-seven to the square mile, is greater than that of any other State.

If, however, a comparison be made between the mortality of this State and that of different cities, in which case the relation of density of population is reversed, it is found that this State presents a very unfavorable condition, as will appear from an analysis of the following table, which is derived from the Report of the Board of Health of New York City, for 1872:—

CITY.	STATE.	Population.	Deaths in 1872.	Death-rate per 1,000 Inhabitants.
-	<i>Massachusetts.</i>	1,541,542*	85,019	22.7
New York,	New York,	1,000,000*	32,647	32.6
Philadelphia,	Pennsylvania,	728,000*	18,987	26.1
Brooklyn,	New York,	450,000*	12,648	28.1
St. Louis,	Missouri,	400,000*	8,047	20.1
Chicago,	Illinois,	367,293	10,156	27.6
Baltimore,	Maryland,	300,000	7,546	25.1
Boston,	<i>Massachusetts.</i>	265,000*	8,089	30.5
Cincinnati,	Ohio,	250,000*	5,116	20.5
New Orleans,	Louisiana,	200,000*	6,122	30.6
San Francisco,	California,	188,323	3,232	17.2
Buffalo,	New York,	150,000*	2,594	17.3
Cleveland,	Ohio,	120,000*	2,337	19.5
Newark,	New Jersey,	115,000*	3,636	31.6
Washington,	District of Columbia,	110,000*	2,230	20.3
Detroit,	Michigan,	100,000*	2,390	23.9
Albany,	New York,	95,000*	1,877	19.7
Milwaukee,	Wisconsin,	90,000	1,961	21.8
Pittsburg,	Pennsylvania,	86,076	2,353	27.3
Providence,	Rhode Island,	72,910	1,610	22.1
Rochester,	New York,	65,424*	1,188	18.3
Richmond,	Virginia,	60,000*	1,714	28.6
Memphis,	Tennessee,	55,000*	2,561	46.6
New Haven,	Connecticut,	55,000*	1,215	22.1
Alleghany,	Pennsylvania,	53,180	1,270	23.9
Troy,	New York,	50,000*	1,702	34.0
Charleston,	South Carolina,	48,956	1,557	31.8
Worcester,	<i>Massachusetts.</i>	47,500*	1,383	29.1
Lowell,	"	45,000*	1,046	23.2
Cambridge,	"	44,000*	1,068	24.3
St. Paul,	Minnesota,	40,000*	708	17.7
Fall River,	<i>Massachusetts.</i>	40,000*	1,067	26.7
Hartford,	Connecticut,	40,000*	633	15.8
Wilmington,	Delaware,	37,000*	772	20.9
Portland,	Maine,	33,000*	760	23.3
Dayton,	Ohio,	30,473	608	19.9
Lawrence,	<i>Massachusetts.</i>	30,000*	692	23.1
Manchester,	New Hampshire,	30,000*	608	20.2
Quincy,	Illinois,	30,000*	477	15.9
Evansville,	Indiana,	30,000*	789	26.3
Lynn,	<i>Massachusetts.</i>	30,000*	598	19.9
Charlestown,	"	28,330	769	27.1
Savannah,	Georgia,	28,235	1,108	39.2
Elizabeth,	New Jersey,	27,000*	371	13.7
Peoria,	Illinois,	26,000*	429	16.5
Salem,	<i>Massachusetts.</i>	26,000*	602	23.1
New Bedford,	"	23,000*	521	22.6
Hoboken,	New Jersey,	22,000*	723	32.9
Chelsea,	<i>Massachusetts.</i>	21,000*	384	18.3
Galveston,	Texas,	20,000*	559	27.9
Petersburg,	Virginia,	20,000*	539	26.9
Terre Haute,	Indiana,	20,000*	365	18.2
Wilmington,	North Carolina,	18,000*	430	23.9

* In these cities the population is estimated, and in others it is actual.

CITY.	STATE.	Population.	Deaths in 1872.	Death-rate per 1,000 Inhabitants.
Sacramento, . .	California, . . .	16,298	352	21.6
Burlington, . .	Iowa, . . .	16,000*	157	9.8
Gloucester, . .	Massachusetts, . .	16,000*	351	21.9
Denver, . .	Colorado, . . .	16,000*	135	8.4
Vicksburg, . .	Mississippi, . . .	15,000	548	36.5
Jacksonville, . .	Florida, . . .	10,000	134	13.4
London, . . .	England, . . .	3,311,298	70,893	21.4
Paris, . . .	France, . . .	1,851,792	39,111	21.1

* In these cities the population is estimated, and in others it is actual.

From this table it appears that the death-rate of this State, for 1872, was greater than that in more than half of the larger cities of the country; that only a few cities—namely, New York, Brooklyn, Chicago, Baltimore, New Orleans, Newark, Pittsburg, Richmond, Memphis, Troy, Charleston, Evansville, Savannah, Hoboken, Galveston, Petersburg, and Vicksburg, nine of which are Southern cities—show a notably higher rate; that the mortality of the whole State was greater than that of London or Paris; and, finally, that the larger cities of the State present a very unfavorable sanitary condition, especially when compared with those which contain nearly an equal number of inhabitants.

From the next table it is found that, in 1872, there was a marked increase in the death-rate of the State, while during the previous six years, after the close of the war, it varied but little.

[From the 31st Reg. Rep. of Mass. for 1872.]

YEARS.	Population.	Deaths to 100 living.	No. living to one death.
1866,	1,303,116*	1.815	55
1867,	1,340,229*	1.691	59
1868,	1,378,398*	1.852	54
1869,	1,417,654*	1.838	54
1870,	1,457,351	1.875	53
1871,	1,498,856*	1.864	54
1872,	1,541,542*	2.272	44

* Estimated.

If now, in connection with the last table, we analyze the succeeding one, taken from the same registration report, together with that of 1870,—

DEATHS.							DEATHS TO 100,000 POPULATION.							
							CAUSES OF DEATH.							
1866.	1867.	1868.	1869.	1870.	1871.	1872.		1866.	1867.	1868.	1869.	1870.	1871.	1872.
24,683	23,779	26,653	27,148	28,348	29,338	36,302	All Causes,* . .	1,377.44	1,354.56	2,069.33	1,874.79	1,945.17	2,012.72	2,490.10
24,105	23,301	25,189	25,713	26,998	28,043	34,845	Specified Causes,* . .	1,392.07	1,317.48	1,955.66	1,775.68	1,832.54	1,924.20	2,390.15
							(CLASSES.)							
5,861	5,506	6,869	6,898	6,916	6,544	10,792	Zymotic Diseases, .	460.04	429.46	533.31	476.36	474.56	449.02	740.27
6,422	6,129	6,299	6,569	7,185	7,272	8,042	Constitutional Dis.,	504.08	478.06	489.05	453.64	493.02	498.98	551.63
6,469	6,343	7,157	7,177	7,556	8,160	9,617	Local Diseases, .	507.78	494.76	555.67	495.63	518.47	559.91	659.67
4,378	4,432	3,865	4,027	4,206	4,771	5,103	Developmental Dis.,	343.64	345.70	300.07	278.09	288.61	327.36	350.03
975	891	999	1,042	1,135	1,296	1,291	Violent Deaths, .	76.53	69.50	77.56	71.96	77.88	88.93	88.55

* Including still-born.

it will be observed that the rate of mortality has been increasing gradually; that, previous to 1872, the mortality, included under constitutional, local, and developmental diseases, shows comparatively slight variations, from year to year, though, as a general thing, there was a gradual increase in the rate; that, in 1872, these same diseases furnished a higher rate of mortality than during either of the previous years; finally, that, during 1872, there was a very marked increase in the number of deaths, included under the head of zymotic diseases, over all the previous years, during which the rate varied inconsiderably.

To recapitulate the facts which have been adduced to illustrate the statement that there is opportunity for improvement in the sanitary condition of our State, it is found that the mortality-rate is higher than that of any other State in the Union, excepting Arizona and Louisiana; that it presents an unfavorable comparison with many of the larger cities of the country, with London or Paris; that the death-rate is increasing gradually; and that, in 1872, while there was an unusual increase in the rate of mortality from all diseases, the affections included under the head of zymotic diseases occasioned a notably large number of deaths.

This last fact alone furnishes a strong confirmation of the second portion of our statement, namely, that a change for the better in this State is possible; for, while it is known that the province of preventive medicines is not limited to any single disease, or any class of diseases, the results of all experience and researches go to show that its greatest influence is exerted in the direction of those affections which are included under the head of zymotic diseases in registration reports, a very large proportion of which are known to be due to removable causes.

Again, during the year 1872, there were recorded 1,029 deaths from small-pox, "which has never appeared in such relations since registration was established in Massachusetts," and the fact that it did so appear in that year, affords a striking illustration of our general line of thought, that individuals, communities, and the State as a whole, have been remiss in their duties to themselves and to one another in not employing all available means for the prevention of disease, since it

cannot be denied that the adoption of proper precautions might have prevented many, if not most, of the deaths from this cause in that year, as was done in the succeeding year.

It is a very common belief that an increased *rate* of mortality is the necessary result of an increase in the density of population. That this is a very general result cannot be denied; but that it is a *necessary* one, we think, admits of question,—a point which may well be illustrated by reference to the sanitary condition of London, as indicated by the rate of mortality which was computed for a long series of years by Dr. Greenhow. He states that, during the decennial period, 1681 to 1690, the population of that city was about 530,000, while the death-rate, on the average, was about 42 in a thousand.

During the period, 1746 to 1755, with a population of 653,000, the mortality was 35 in a thousand. From 1846 to 1855, the number of inhabitants had increased to 2,362,236, yet the death-rate was reduced to 25 per thousand, notwithstanding the fact, that during this period occurred the cholera epidemics of 1848-49 and 1854-55. Since 1856, the population has increased to 3,311,298, estimated to the middle of 1872; while the death-rate has shown a gradual reduction, until, for that year, it was only 21.4 per thousand.

This same point is confirmed by the experience of other parts of England, where, during the past twenty-five years, constant efforts have been made to reduce the mortality by means of improvements in the sanitary condition of the people, and principally in the way of improving the facilities for water-supply and drainage. The beneficial effects of these endeavors have been proved statistically in the reports of the medical officer of the privy council, wherein it is shown that, in twenty-four cities and towns, with a population varying between 160,000 and 4,000, the average death-rate was reduced from 24.7 per thousand to 21.9, after the introduction of improved sanitary works,—chiefly in the way of furnishing good water-supplies and efficient drainage.

M. Deville, in a report addressed to the Prefect of the Seine, in 1864, showed that, during a period of twenty years (1841 to 1861), the mortality of Paris was reduced from the ratio of 1 death to 36 inhabitants to that of 1 to 39. Accord-

ing to the statement in the table, which is given on page 67, the rate was still further reduced, in 1872, to 1 to 47.

There may be many who find satisfaction in the belief that, previous to the year 1872,—which they would regard as an exceptional one from unavoidable causes,—the mortality of the State was as low as could reasonably be expected, taking all things into consideration. With such we might agree, perhaps, when we call to mind the existing condition of sanitary arrangements throughout the State. But, in addition to the fact which we have shown, that the entire State and our larger cities compare unfavorably with other States and other cities, it will be observed, upon an analysis of the preceding tables, that the rate of mortality shows, on the whole, a constant increase; though, to be sure, it is not very marked. Moreover, this comparatively slight increase in the past is, by no means, a guarantee of a similar record for the future; indeed, the very fact of a constantly increasing *death-rate* indicates even a neglect of additional precautionary measures, which ought to be made in order to compensate for the greater density of population and the accompanying dangers to health and life,—a neglect which inevitably will find its expression in a higher sickness and mortality rate, as it did notably in the year 1872, when, from zymotic diseases alone, there were 4,248 deaths more than during the previous year in this State. This increased mortality we have allowed was unavoidable under the existing sanitary circumstances; but the sequel of the small-pox epidemic in that year ought to teach an important lesson; for, as that dread disease was literally stamped out,—it is to be hoped never to return,—under the immediate stimulus of private and public interests, so may the ravages of other diseases be checked, in a great measure, by individual, corporate and united action.

Our State, it is true, affords many examples of the beneficial results of sanitary improvements, which have had their origin in the greater or less appreciation of the community of interest which exists between the individual and his town or city; but the preceding observations will serve to show that these improvements are still inadequate to the full realization of the demands of sanitary science. The mortality from consumption alone has shown a constant reduction for several

years ; a result which is due, in a great measure, to improved drainage, as has been indicated by Dr. Bowditch, and demonstrated more fully, perhaps, by the recorded experience of many English towns, as will appear from the following table, which is given by Baldwin Latham in his work upon Sanitary Engineering, in order to illustrate the benefits which followed the introduction of efficient works for sewerage and water-supply :—

NAME OF PLACE.	Population in 1861.	Average Mortality per 1,000 before Construction of Works.	Average Mortality per 1,000 since Completion of Works.	Saving of Life, per cent.	Reduction of Typhoid Fever, rate per cent.	Reduction in rate of Phthisis, per cent.
Banbury, . . .	10,238	23.4	20.5	12½	48	41
Cardiff, . . .	32,954	33.2	22.6	32	40	17
Croydon, . . .	30,229	23.7	18.6	22	63	17
Dover, . . .	23,108	22.6	20.9	7	36	20
Ely, . . .	7,847	23.9	20.5	14	56	47
Leicester, . . .	68,056	26.4	25.2	4½	48	32
Macclesfield, . .	27,475	29.8	23.7	20	48	31
Merthyr, . . .	52,778	33.2	26.2	18	60	11
Newport, . . .	24,756	31.8	21.6	32	36	32
Rugby, . . .	7,818	19.1	18.6	2½	10	43
Salisbury, . . .	9,030	27.5	21.9	20	75	49
Warwick, . . .	10,570	22.7	21.0	7½	52	19

The results of these improvements, in the direction of typhoid fever, as indicated by this same table, acquire especial interest in connection with our present inquiry, since this disease is one of the most prominent causes of mortality in our State, and all the more when it is borne in mind that "this is a disease of scattered communities rather than of crowded towns, of rural rather than of urban districts," as is shown by the annexed table, which is given in a paper contributed by the late Secretary to the Second Report of this Board, upon "the causes of typhoid fever in Massachusetts."

	Population, 1865. (All ages.)	Total deaths from Typhoid in ten years.	Average No. of Persons living each year to one death.	Average No. of deaths each year to 1,000 persons living.
One hundred and forty-seven (147) cities and towns of more than 2,000 inhabitants, . . .	1,044,294	7,888	1,323.90	0.755
One hundred and eighty-four (184) towns of less than 2,000 inhabitants,	213,468	2,539	840.75	1.189

Evidence is adduced in this paper by Dr. Derby, to show that the introduction of pure water into our cities has been followed by a mitigation in the severity of this disease, and a diminution in the number of cases and mortality-rate, *but in no very striking degree*. The explanation of this last fact, he found in the conclusions to which his investigations led, and which he stated in the following words:—"The single continuous thread of probability which we have been able to follow in this inquiry, leads uniformly to the *decomposition of organized* (and chiefly vegetable) *substances*, as the cause of typhoid fever as it occurs in Massachusetts."

"Whether the vehicle be drinking-water made foul by human excrement, sink drains, or soiled clothing; or air made foul in inclosed places by drains, decaying vegetables or fish (Swampscott), or old timber (Tisbury), or in open places by pigsties, drained ponds or reservoirs, stagnant water, accumulations of filth of every sort, the one thing present in all these circumstances is decomposition."

In other words, while different cities and towns in the State have improved their sanitary condition, by providing an abundance of pure water, they have universally neglected, to a greater or less degree, to afford protection against the equally, if not more, pernicious effects of impure air. Moreover, it is a well-known fact, that in most of our towns, few or no provisions are made for securing the blessings which are afforded by pure air and clean water.

The conclusions which, we believe, we are warranted in drawing from all the preceding observations, may be summed

up in the following words: the sickness and death-rates in our State, in towns as well as in cities, are higher than they ought to be, with our present knowledge of the origin of diseases, and of the means at our command for their prevention. While these high rates point distinctly to important and serious effects upon the social, moral and political life and physical well-being of the State, they likewise imply an excessive annual monetary tax, which impedes, to a considerable extent, the prosperity of the Commonwealth.

In conclusion, it will be instructive to form some estimate of what may be saved by a reduction of the mortality; in other words, to give a practical illustration of the fact that it is practising true economy to encourage the study, and follow out the teachings, of sanitary science.

Statisticians have calculated that 11 to one thousand represents the lowest death-rate which can be attained; that this mortality is unavoidable. Instances, however, are not wanting, even in this State, to show that this is not necessarily the lowest limit; but these are quite uncommon. Cities of this country and Europe have never reached this rate, nor is it probable that they will. In London, the standard sought to be obtained is 17 per thousand, though this limit has always been exceeded.

During eight years, 1865 to 1872, inclusive, the period for which the calculations were made in the first part of this paper, the average rate of mortality in this State was 19 per thousand. If now the limit of 15 per thousand be adopted, it will not be unreasonable, for in 1867 the rate was only 16.9. The following calculations will show the minimum annual amount which would be saved to the State, if this reduction of only 4 per one thousand be effected.

During the period mentioned, the average population was 1,401,000, in round numbers. With a death-rate of 19 per one thousand, the annual mortality would have been 26,619, while the rate of 15 per one thousand would represent a reduction in the number of deaths to 21,015, or 5,604 less than under the former conditions.

In the former part of this paper it was shown that we might assume, upon good grounds, that every death represents a total of 730 days' sickness and disability. The above

reduction of 5,604 deaths, therefore, would indicate a saving of 4,090,920 days' sickness. Reckoning, also, as before, the minimum total cost of sickness, per day and individual, to be two dollars, then the total annual reduction in the cost of sickness throughout the State would amount to the sum of \$8,181,840. Calculating, however, for the working population alone, in the same way as before, this sum would be reduced to \$3,190,916.

The latter large sum would be an actual annual saving to the State, and hence it would represent the interest upon a capital, which, reckoning upon the basis of six per cent. interest, would amount to \$53,181,933. In other words, in order to effect a reduction, in the annual mortality, of only 5,604, or at the rate of 4 per one thousand, the State might expend a capital of over fifty-three millions of dollars in sanitary improvements, and the sum invested in this manner would continue to return interest, at the rate of six per cent. per annum.

If it is remembered that, in all the preceding calculations, we have endeavored to make use of low estimates only, and, further, that no account has been taken of the actual and immense loss to the State, resulting from a very large number of premature deaths and during the working age, a matter which has been quite fully illustrated by Dr. Jarvis, it must be apparent to all that, with the State as with the individual, the promotion of health is true economy.

ON THE TRANSPORTATION OF LIVE-STOCK.

By J. C. HOADLEY, Esq. (OF LAWRENCE),
MEMBER OF THE BOARD.



ON THE TRANSPORTATION OF LIVE-STOCK.

Gentlemen of the State Board of Health.

Early in the current year you did me the honor to assign to me the duty of preparing, for our next annual report, a paper on the transportation of live-stock, considered in its economical, sanitary and humane aspects.

Feeling deeply the importance of the subject, and conscious of very imperfect qualifications to treat it adequately, I yet undertook it, with secret reluctance, only because I felt it to be a duty which I ought not to evade.

Without special knowledge of the subject, at the outset, I have sought to inform myself by correspondence, by conversation with experts and men of experience, by the perusal of such printed matter, bearing upon it, as I could collect, in this country and in Europe; and, to give distinctiveness and accuracy to information so acquired, by personal observation.

From Mr. Lucien Prince, of Worcester, whose knowledge of all that relates to the transportation, by railroad, of horses, beef-cattle, sheep and swine, on all the great routes converging to our markets, is both accurate and extensive, I obtained much valuable information and assistance in my personal investigations.

It is almost impossible to overstate the importance of this subject. It touches society at all points, and nowhere lightly.

The importance of an abundant and regular supply of food, at moderate price, is felt by all; and, to such supply, the best method of transporting live-stock, or some available substitute, such as the safe transportation of dressed-meats, seems absolutely essential.

The importance to the public health, of wholesome and nutritious viands, free from suspicion of deleterious taint, will

not be denied, and these cannot be obtained by methods of transportation injurious to the health of the animals transported.

The importance, to the morals of the community, of removing the debasing and degrading spectacle of needless suffering, if such exist, from the great highways of travel, will not be generally disputed.

The movement of live-stock by rail has already reached vast proportions, and many causes conspire to augment it year by year.

The growth of population in this country, as in all others, is, for the most part, the growth of cities; and growing cities must draw their supplies of food from an ever-widening area.

The remarkable diffusion of luxury, seen on all hands, is no less observable in the increased consumption of butchers' meat, than in domicile, equipage, dress and amusement; and, while less obtrusive than other forms of luxury, it is yet of vast importance, by reason of the breadth to which it extends among the mass of the population.

Salt pork, salt beef, salt fish, which, with rye-flour, indian-meal, potatoes, turnips and cabbages, formed almost the exclusive diet of the people forty years ago, when fresh meat, wheaten bread and sweetened food were sparingly used as rare and costly dainties, have given place, to an immense extent, to fresh meats, fresh fish, oysters, white bread made of fancy brands of wheat-flour,—too generally ill-made and underdone, indeed,—to sweetened pies, cakes and puddings, fruits, and the more delicate vegetables.

Desirable as this change may be, on the score of health, comfort and refinement, its effect on the sources of supply is obvious and undeniable.

This diffusion of luxury, shown by the increased consumption of butchers' meat by all classes of the people, save the very wealthy, who can generally command such a diet, and the very indigent, to whom it can never be regularly accessible, is most strongly developed in cities; so that the diffusion of luxury and the growth of cities unite to produce a joint and cumulative effect.

The increase of commercial and manufacturing cities, and the spread of manufacturing and mechanical establishments throughout the State and the adjoining country, would result

even more than it is observed to do, in a diminution of the home supply of cattle, sheep, swine and domestic fowls, but for the greatly enhanced prices given to beef, mutton and poultry, by the ever-increasing demand;* and, in spite of this

* The following statements are condensed from a paper on beef cattle, in "Griffith's Annual Live-Stock Review" for 1873, pp. 10, *et seq.*; but having found, on collating the figures with those contained in the reports of the census, numerous discrepancies, due, apparently, to the editor's having drawn them from another source,—probably the reports of the agricultural department,—I have substituted the figures given in the census reports.

In 1860, according to the reports, there were, in the whole United States, a grand total of 23,967,028 head of beef cattle, including milch cows, working oxen and other cattle, as well in cities and villages as on farms.

After a lapse of ten years the number appears, not only not to have increased, but to have slightly diminished; the number in 1870 being only 23,074,582,—a falling off of 892,446, equal to nearly 3.1 per cent.

During this same decade, the population rose from 31,443,321 in 1860 to 38,558,371 in 1870,—an increase of 7,115,050, equal to 22.6 per cent.

Accordingly, the ratio of the number of head of beef cattle to the population fell off from 92.1 per cent. in 1860 to 72.8 per cent. in 1870. This relative loss was heavy in New England and New York, but was heaviest in the States involved in the rebellion, particularly in those which were the theatre of active hostilities, where the destruction of farm-stock of all kinds was necessarily immense. Something has been done, perhaps, to make up this loss; but on that subject opinions differ, and the data hardly exist for an intelligent decision.

It is estimated by Professor Silas L. Loomis, from a digest of the census returns for thirty years,—reports of 1840, 1850, 1860,—in a paper published in the report of the agricultural department for 1863, that every one hundred people require eighty head of neat-cattle, of which eight must be working oxen, and twenty-eight milch cows; but he points out modifying causes in the habits of the people, such as the substitution of horses and mules for oxen, and the introduction of steam-power, together with the more general use of mutton and other viands, which would, he thinks, reduce the ratio from eighty down to sixty-eight for each one hundred of the population.

Although his facts are not quite accurate, and although his reasoning is not altogether conclusive, we may, perhaps, assume the number at which he arrives—sixty-eight per cent.—as the best ascertainable ratio of neat-cattle to the population, to give an adequate supply of butter, cheese, and milk, of working oxen, and of cattle for the butcher.

According to this assumption, Maine, which possessed a small surplus in 1860, has only just a fair supply for herself in 1870; New Hampshire, which had some to spare in 1860, could part with only 6.2 head to each one hundred of her people, or less than 30,000 head, in 1870; Vermont, although exhibiting a relative loss of about one-fifth, still has a handsome surplus, equal to 36.8 per cent. of her people, or over 121,000 head, in 1870; Massachusetts and Rhode Island, which had rather more than one-third of a supply for their people in 1860, possess in 1870 but little more than one-fourth; and Connecticut, which had in 1860 more than three-fourths, has in 1870 not quite a two-thirds supply. New England, on the whole, has reduced her supply from about .8 of the requisite number in 1860 to about two-thirds. New York stands about the same as New England, although the relative loss has been less, and has in 1870 just .7 of her own supply. New England and New York, taken together, have just one two-thirds supply; and the remaining States and Territories, although show-

countervailing influence, the home supply, *per capita*, does in fact diminish from census to census.

ing a large relative loss, still possess a considerable excess, and bring up the ratio for the whole country to 72.8 per cent.—an excess of one-sixteenth over the number assumed to be required, equal to 1,850,000 head. Table VII. exhibits in even thousands the number of head above and below the assumed ratio, 68 per cent. of the population, possessed in 1870 by each and all of the six New England States, by New York, and by New England and New York together, by the remaining States and Territories, and by the whole United States.

Tables I., II. and III. will be readily understood. It is only necessary to call particular attention again to the fact that the number of cattle in 1860 and 1870 includes those "not on farms,"—that is, milch cows and other cattle in villages and cities, together with those on farms; and that all the figures are drawn from the reports of the eighth and ninth census.

Table IV. shows the course of the trade in cattle in Chicago almost from the beginning. With the exception of two or three of the earlier years,—notably 1858, 1859,—the growth of the business has been very regular; and the ratio of the number shipped to the whole number received remains remarkably uniform, varying but slightly from two-thirds. This table is drawn, with modifications, from "Griffith's Live-Stock Annual Review"; but some perplexing mistakes in the table in the edition for 1872 are corrected from that of 1870; and I have added the ratios in the last column, for convenience of comparing one year with another.

Tables V. and VI. show the growth and magnitude of the cattle trade of Buffalo and Albany, important points in the line of our chief supply.

The statistics relating to the Boston Live-Stock Market, embracing the Union Market at Watertown and the Brighton Market, have been gathered from the files and memoranda of Mr. George J. Fox, for the past ten years reporter of this live-stock market, expressly for this Report, and are probably the most full and trustworthy now to be obtained. As they possess a certain interest, and are not to be found in a collected form elsewhere, they are here presented in considerable detail.

TABLE I.

Showing the population, the number of neat-cattle, and their ratio to the population, in each of the New England States; the aggregate in New England; the same in New York; and the aggregate in New England and New York, and in the other States and Territories; and the aggregate in the United States. [From the Report of the Eighth Census.]

1860.

STATES AND TERRITORIES.	Population.	Total number Neat-Cattle.	Ratio Per cent.
Maine,	628,279	454,173	72.3
New Hampshire,	326,073	285,721	87.6
Vermont,	315,098	397,186	126.0
Massachusetts,	1,231,066	328,243	26.7
Rhode Island,	174,620	45,249	25.9
Connecticut,	460,147	264,011	57.4
New England,	3,135,283	1,774,533	56.6
New York,	3,880,735	2,004,975	51.7
New England and New York,	7,016,018	3,779,508	53.9
Other States and Territories,	24,427,303	25,187,520	103.1
Total United States,	31,443,321	28,967,028	92.1

Diversified employments, augmented wages, and reduced hours of labor, have produced their inevitable results,—relaxed industry and diminished thrift. Of all the families which, even so lately as thirty years ago, would have kept a cow, a pig and a dozen hens, cared for them after thirteen or

TABLE II.

Showing the population, the number of neat-cattle, and their ratio to the population, in each of the New England States; the aggregate in New England; the same in New York; and the aggregate in New England and New York, and in the other States and Territories; and the aggregate in the United States. [From the Report of the Ninth Census.]

1870.

STATES AND TERRITORIES.	Population.	Total number Neat-Cattle.	Ratio Per cent.
Maine,	626,915	428,826	68.4
New Hampshire,	318,300	236,169	74.2
Vermont,	330,551	346,501	104.8
Massachusetts,	1,457,351	271,315	18.6
Rhode Island,	217,353	40,105	18.4
Connecticut,	537,454	231,094	43.0
New England,	3,487,924	1,554,010	44.6
New York,	4,382,759	2,086,230	47.6
New England and New York,	7,870,683	3,640,240	46.3
Other States and Territories,	30,687,688	24,434,342	79.6
Total United States,	38,558,371	28,074,582	72.8

TABLE III.

Showing the number of neat-cattle in the United States, according to the Reports of the Census in 1840, 1850, 1860 and 1870.

STATES AND TERRITORIES.	1840.	1850.	1860.	1870.
Maine,	322,255	343,339	454,173	428,826
New Hampshire,	275,662	267,910	285,721	236,169
Vermont,	384,341	348,848	397,136	346,501
Massachusetts,	282,574	259,994	328,243	271,315
Rhode Island,	36,891	36,262	45,249	40,105
Connecticut,	238,650	212,675	264,011	231,094
New England,	1,540,273	1,469,028	1,774,533	1,554,010
New York,	1,901,214	1,877,639	2,004,975	2,086,230
New England and New York,	3,441,487	3,346,667	3,779,508	3,640,240
Other States and Territories,	11,530,099	14,432,240	25,187,520	24,434,342
Total, United States,	14,971,586	17,778,907	28,967,028	28,074,582

fourteen hours of daily labor, fed them, almost without cost, on the refuse of their own vegetable diet and on painfully-

TABLE IV.

Receipts and shipments of cattle at Chicago for eighteen years,—1855-1872.

YEARS.	Received.	Shipped.	Packers and City Butchers.	Ratio of Shipment to receipts.
1855,	10,715	8,253	2,462	77 per ct.
1856,	81,950	22,502	9,448	70 "
1857,	48,524	25,502	23,022	53 "
1858,	118,155	44,149	74,006	37 "
1859,	90,574	35,973	54,601	40 "
1860,	155,753	104,122	51,631	67 "
1861,	204,579	124,146	80,433	61 "
1862,	209,655	112,745	96,910	54 "
1863,	298,381	203,247	95,134	68 "
1864,	336,627	179,520	157,107	53 "
1865,	333,362	242,766	90,596	73 "
1866,	392,604	262,150	130,454	67 "
1867,	327,650	213,265	114,385	65 "
1868,	324,634	215,987	108,547	67 "
1869,	403,102	294,717	108,385	73 "
1870,	532,964	391,709	141,255	73 "
1871,	543,050	401,927	141,123	74 "
1872,	684,075	510,025	174,050	75 "
1873,	761,428	574,181	187,247	75 "
1874,	843,966	622,929	221,037	74 "
	6,651,648	4,589,815	2,061,833	69 per ct.

TABLE V.

Receipts of cattle, sheep and hogs at the Buffalo Stock-Yards, for sixteen years,—1857-1872.

YEARS.	Cattle.	Sheep.	Hogs.
1857,	108,203	307,549	117,468
1858,	134,073	345,731	92,194
1859,	103,337	189,579	73,619
1860,	166,972	145,354	85,770
1861,	141,929	238,452	101,679
1862,	129,433	524,976	105,671
1863,	154,789	574,849	91,128
1864,	135,797	155,959	301,629
1865,	212,839	207,208	300,014
1866,	275,091	341,560	442,831
1867,	257,872	239,943	607,440
1868,	265,105	385,815	470,578
1869,	247,871	381,450	794,272
1870,	388,057	561,447	239,519
1871,	384,294	551,131	886,014
1872,	379,086	606,748	1,450,109
Receipts of horses, 1868,			7,737
1869,			12,088
1870,			7,896
1871,			13,319
1872,			20,780

gathered garbage, and found in the eggs and chickens, in the milk and spring calf, and in the fall porker, no inconsiderable

TABLE VI.

Albany Live-Stock Market,—Receipts in the five years, 1868-1872.

YEARS.	Cattle.	Sheep.	Hogs.	Horses.
1868,	226,015	670,600	328,100	—
1869,	289,877	656,200	207,500	—
1870,	275,846	590,400	263,200	—
1871,	280,534	683,009	940,500	—
1872,	372,487	714,900	2,035,200	19,456
1873,	404,887	691,200	1,601,200	26,736
1874,	490,000	—	—	—

TABLE VII.

Showing the excess and deficiency of cattle in each of the New England States, in all New England, in New York, and in New England and New York taken together; in the remaining States and Territories, and in the whole United States, in even thousand head.

STATES.	1870.	
	Surplus.	Deficiency.
Maine,	3,000	—
New Hampshire,	20,000	—
Vermont,	121,000	—
Massachusetts,	—	720,000
Rhode Island,	—	108,000
Connecticut,	—	134,000
New England,	—	818,000
New York,	—	894,000
New England and New York,	—	1,712,000
Other States and Territories,	3,567,000	—
Total surplus in United States,	3,567,000	1,855,000

The deficiency here set down for Massachusetts (720,000 head), it will be observed, is not the annual deficiency, but the number which would be required, according to this estimate, to make our State self-supplying for the future. If so many cattle of all grades and ages, with a suitable proportion of bulls, cows, working-oxen, steers, heifers and calves, had been added to her stock, once for all, in 1870, and properly cared for, their natural increase, together with that of her previous supply, would afford annually all the beef, mature and immature, required by her markets. If we assume three years as the mean age at which they would be slaughtered, this would be equivalent to 720,000 divided by 3, or say 240,000 annually. The number actually imported can hardly be stated with accuracy. The 167,730 sold at Brighton are thought to supply 600,000 people,—part of them in adjoining States,—and these people have a partial supply at home,—and some of these cattle are raised in Massachusetts. But if we assume that 600,000 people, in and about Boston, require the importation of 167,730 head of cattle annually, equal to 28 to each 100 of the population, there would still be required an annual importation of 72,270 head to supply the remaining 857,351 people in the State, equal to 8.4 to every hundred, which may not be very far from the mark. But this subject requires more careful examination than I have been able to give it.

part of the year's subsistence, not one-half in similar circumstances now keep either cow or pig.*

On the other hand, the numerous railways which ramify over the plains and prairies, thread the valleys, climb the hills and skirt the shores of our wide and diversified land, gather, along with the various products of the soil, immense herds of cattle and other domestic animals, and pour them into the cities, to satisfy the growing wants and spreading luxury of their increasing population. "The maw of the city is insatiable." New grazing grounds are explored, sources of supply even more remote are laid under contribution, vaster herds are crowded into railway carriages, the journeys become longer if their several stages do not, and the accumulated effect of privations and hardships which, severally, might be comparatively harmless, often shows itself in extreme prostration at the end of a journey of two or three thousand miles.

Railway companies are often slow to perceive the necessity of providing improved accommodation for a rapidly growing business, rarely anticipate imminent requirements, and hardly complete the most necessary improvements before they are found already inadequate.

The wants of this living freight, so simple, yet so imperative, water, food, rest, shelter,† are not always con-

* "Now I've got a cow and a pig," says poor Richard, "every body bids me good-morning,"—titles to social consideration less prized now than in poor Richard's day. If asked for the proof of this assertion, I should give my own observations, the result of many inquiries among intelligent observers of the habits of our village population, and appeal with confidence to all whose memory goes back thirty years, and who have even given a thought to the subject..

† Simple as these requirements are, they are all, save clothing and fuel, which may come under the head of shelter, too, that are required for the physical comfort of man. His wants, as summed up by "Holi chirche," the "Lovely lady of leere," in Piers Plowman's vision, are:

"And comaunded of his curteisie
In commune three thynges,
Are none nedfulle but tho,"

* * * * *

"That oon vesture,
From cold thee to save;
And mete at meel
For misese of thiselve;
And drynke whan thou driest."

[Vision of Piers Plowman, edition of Thomas Wright: John Russell Smith, London 1856, line 498, *et seq.*]

sidered as much as economy and good policy, to say nothing of humanity, urgently demand. The consequences of these coöperating, and, for the most part, mutually intensifying causes, are to be considered here under three aspects, with a view to such ameliorations as may be found practicable.

1. Economy ; abundant food at reasonable price.
2. The public health ; wholesome food at any price.
3. The public morals ; humanity, which should be beyond price.

The first topic furnishes the key to the question.

It is a humiliating reflection that whatever abuses may be found to exist, will admit of remedy only so fast and so far as economical considerations demand, or at least permit. Fortunately these considerations will be found, it is believed, altogether on the right side. Sanitary and humane considerations, deeply affecting the public at large, often touch individuals too lightly to call out strenuous effort ; but cheap and safe transportation of supplies of food affect, individually, a large body of energetic and active men, who will not fail to make their views and interests tell for all, and more than all, their true relative importance.

Practices and modes of transportation injurious to the health of the animals transported, and therefore, of necessity, prejudicial to the public health,—conspicuously cruel, and therefore degrading to the public morals,—have hitherto prevailed, and, to a certain extent, still continue, because believed to be for the interest of those who carry on the traffic and of the railway companies who conduct it. On the other hand, increased comfort and ameliorations of every kind have been supplied, and will be carried still further, as fast as their adoption can be shown to be profitable.

It must be gratefully acknowledged that the improvements already made have been very marked, and that the severe and sweeping censures to which those who carry on this traffic were a few years ago subjected, whether ever altogether deserved or not, no longer apply with equal justice. The great bulk of the business has passed beyond the purview of societies for the prevention of cruelty to animals, only its

minor evils and its occasional and comparatively rare abuses now requiring their intervention, although their untiring vigilance can never be dispensed with.

Many lines of railway make the transportation of live-stock a leading feature of their business, and strive to attract such freight from rival lines by every attainable improvement in the material and arrangements for the comfort of the animals and of the men who have them in charge.

On some railways, palace-cars are attached to stock-trains, for the accommodation of drovers and of men in their employ. It is but a very few years since these men were compelled on many lines to ride on top of the stock-cars, without protection from the weather, however inclement, by day or night, and exposed to the most appalling dangers and to extreme hardships; and even now, the wretched "caboose," still in use on some important roads, compares poorly with the corresponding accommodation furnished elsewhere.

Some of the cattle-cars recently placed on the rail are greatly improved over those of earlier date, the latter, of course, still forming the bulk of the equipment, and presenting various degrees of adaptation to their purpose.

Higher speed has been pretty generally attained, and these trains are less frequently subjected to capricious and wanton delays for privileged trains, from which animals suffer great hardships whenever such delays occur. Not only are their hours of confinement and fatigue so lengthened, but their too brief period of rest is sadly curtailed. The requirements of the recent law of the United States* on this subject are

* ACT OF CONGRESS.

An Act to prevent Cruelty to Animals while in Transit, by Railroad or other means of Transportation, within the United States.

[Passed March 3, 1873.]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no railroad company within the United States, whose road forms any part of a line of road over which cattle, sheep, swine or other animals, shall be conveyed from one state to another, or the owners or masters of steam, sailing or other vessels carrying or transporting cattle, sheep, swine or other animals, from one state to another, shall confine the same in cars, boats or vessels of any description, for a longer period than twenty-eight consecutive hours, without unloading the same for rest, water and feeding for a period of at least five consecutive hours, unless prevented from so unloading by storm, or other accidental causes. In estimating such confinement, the time during which the animals have been confined

now generally complied with at the North, and, so far as my observation goes, to the great advantage of all parties. Not only is the time of actual travel shortened, but the proportionate length of the interval of rest to the time spent on the rail is much increased—a point of great importance.

At many stations, better yards, sheds, mangers and watering-troughs have been provided, and the platforms for embarking and disembarking have been rendered very commodious. Almost invariably, the latest and newest cattle-yards are in all respects the best constructed, the best planned, the best appointed, the most conducive to the health and comfort of the animals, and the most convenient for the men engaged in the business and for the servants of the railway companies. Whatever seems to be objectionable will be found to be old, and to be continued in use only because considered too valuable to be cast aside.

without such rest on connecting roads from which they are received shall be included, it being the intent of this act to prohibit their continuous confinement beyond the period of twenty-eight hours, except upon contingencies herein before stated. Animals so unloaded shall be properly fed and watered during such rest by the owner or person having the custody thereof, or, in case of his default in so doing, then by the railroad company, or owners or masters of boats or vessels transporting the same, at the expense of said owner or person in custody thereof; and said company, owners or masters shall in such cases have a lien upon such animals for food, care and custody furnished, and shall not be liable for any detention of such animals authorized by this act. Any company, owner or custodian of such animals who shall knowingly and wilfully fail to comply with the provisions of this act, shall, for each and every such failure to comply with the provisions of the act, be liable for and forfeit and pay a penalty of not less than one hundred nor more than five hundred dollars: *provided, however,* that when animals shall be carried in cars, boats or other vessels in which they can and do have proper food, water, space and opportunity for rest, the foregoing provisions in regard to their being unloaded shall not apply.

SECT. 2. That the penalty created by the first section of this act shall be recovered by civil action in the name of the United States, in the circuit or district court of the United States, holden within the district where the violation of this act may have been committed, or the person or corporation resides or carries on its business; and it shall be the duty of all United States marshals, their deputies and subordinates, to prosecute all violations of this act which shall come to their notice or knowledge.

SECT. 3. That any person or corporation entitled to lien under the first section of this act may enforce the same by a petition filed in the district court of the United States, holden within the district where the food, care and custody shall have been furnished, or the owner or custodian of the property resides; and said court shall have power to issue all suitable process for the enforcement of such lien by sale or otherwise, and to compel the payment of all costs, penalties, charges and expenses of proceedings under this act.

SECT. 4. That this act shall not go into effect until the first day of October, eighteen hundred and seventy-three.

With some exceptions, to be noticed further on, the arrangements provide humane treatment for all classes of animals in transit, and the animals themselves appear to be calm, quiet, comfortable and contented. Of course these terms are here used in a relative sense. Nobody expects railway travel to prove a luxury, whether to sheep or swine, to horned cattle or horses, to the crowded occupants of the emigrant train or to the passenger in a palace-car, "stretched on the rack of a too easy chair." Some degree of hardship and fatigue are expected, and are probably inevitable, and would do no harm if followed by a suitable period of rest and refreshment for recuperation at the journey's end. I shall return to this point by and by.

Exceptional cases of suffering, sometimes resulting in severe loss, occur often enough to emphasize the demand for watchful supervision, and to prove that a minor, yet injurious, degree of similar hardships may too often escape attention. Such announcements as the following, from the "Buffalo Daily Courier" of Thursday, Sept. 22, 1874, relate to the more startling cases, which happily are comparatively rare:—

"A car-load of twenty-one cattle, from Buffalo, were attacked by a mysterious disorder at Washingtonville, Orange County, on Saturday. Eight suddenly died, and others will die. The disease is conjectured to be an affection of the lungs, caused by the recent dry weather and a long confinement in the cars."

It is not improbable that the crowding of twenty-one cattle into a car of dimensions suitable for only seventeen, for the long journey from Buffalo to New York, may have aggravated the disease, and caused the deaths, with but little to attribute to "the recent dry weather"; but it is hardly to be doubted that these cattle had contracted some distemper before entering the car, or were subjected to unusual delays or other extraordinary hardships. Indeed, some degree of overcrowding is much too common.*

* The following extract from a letter, and the figures subjoined, relating to the stock-yards of Pittsburgh, Pa., which I have not visited, confirms the opinion I had formed independently, that "overcrowding is much too common":—

"The great mortality of stock in the stock-yards of this city is owing to the overcrowding of cars. Texas cattle are less liable to die by overcrowding than native, owing, no doubt, to the amount of nerve with which they are endowed, and also the

Some feeble attempts have been made to guard against this abuse, and to provide for regular feeding and watering by furnishing for beef-cattle compartment cars, containing a number of separate stalls, one for each animal. A trough of boiler iron, for food and water, placed along each side of the car, and a long box overhead for carrying a quantity of food which could be supplied by trap-doors to the troughs below, enabled the attendant to feed the animals without removing them from the car. Water could be introduced into the trough at any watering station.

I could not learn that any satisfactory trial had ever been given to this system.

One car, perhaps more than one, has been sent a few trips, with no very marked results one way or the other, so far as I was able to learn, and the little I was told was contradic-

great length of time they can do without food. The stock-yards in this city are very large, and stock is shipped here continually."

The following are the figures from the Report relating to the Pittsburgh Stock-Yards, referred to in the foregoing letter

STOCK.		Shipped.	Dead.	RATIO.	
				One in,	No. in 10,000.
1871,	{ Cattle,	206,384	69	2,991	3.3
	{ Hogs,	672,618	2,184	308	32.4
	{ Sheep,	758,946	1,807	420	23.8
1872,	{ Cattle,	323,687	144	2,317	4.5
	{ Hogs,	1,077,817	4,430	243	41.1
	{ Sheep,	1,006,156	1,875	600	16.6
1873,	{ Cattle,	443,079	551	804	12.4
	{ Hogs,	851,682	4,410	193	51.8
	{ Sheep,	768,285	1,173	655	15.3
1871, 1872, 1873,	{ Cattle,	973,150	764	1,274	7.9
	{ Hogs,	2,602,017	11,024	236	42.4
	{ Sheep,	2,532,387	4,655	544	18.0

The mortality here shown is very formidable, and calls imperatively for a remedy. The worst feature of the case is, that the ratio of loss to number transported has steadily risen from about one in three thousand, in 1871, to one in eight hundred in 1873; the mean for the three years, 1871, 1872, 1873, being one in twelve hundred and seventy-four,—about one-twelfth of one per cent. The same is true of hogs. The ratio has risen from one in three hundred in 1871 to about one in two hundred in 1873; and the mean for the three years is one in two hundred and thirty-six, or about four-tenths of one per cent. In sheep, on the other hand, there has been some improvement, the ratio of loss having fallen from one in four hundred and twenty, in 1871, to one in six hundred and fifty-five in 1873; the mean being one in five hundred and forty-four, equal to about one-sixth of one per cent.

tory.* I carefully examined a car of this kind, and brought away a strong impression that the cost and trouble attending its use would be considerable, and perhaps greater than any resulting advantage.

Unless the loss now sustained by dealers from the "shrinkage" or loss of weight in transit could be almost wholly prevented, or very largely reduced, these compartment cars can hardly come into use, since there is no other fund from which to draw to cover the enhanced cost, and there would still remain the delay and trouble in loading and discharging, and the greatly increased strain upon the temper and patience of the men employed, necessitating, in some cases, the employment of a higher grade of men about the yards, and more self-control and higher discipline than can usually be expected; which would prove grave impediments to the introduction of a system requiring the separate closing of a partition for every animal, and the placing of every one with his head in a particular direction, when ten trains or more, consisting of thirty to thirty-five cars each, and every car laden with sixteen or seventeen animals, must be loaded within a certain definite time or be left over till the next day. Among the five thousand beeves, freighting such a list of trains, often forwarded daily from a single point, many are almost wild, some quite so, and hardly any sufficiently used to handling to permit themselves to be impounded in a narrow stall without nervous terror and violent efforts to escape. Very often there are pairs of comrades who show strong attachment to each other, and would suffer from separation, and from the violence probably required to effect it.

It is even possible that cattle might be found to suffer more from such solitary confinement than from the present mode, excluding, of course, from the latter the excessive crowding occasionally practised. They could lie down, indeed, at will, without danger of being trampled on by their companions; but they could not turn around, nor move far out of their tracks. No farmer, surely, would dare to put his cows and oxen into stalls only twenty-six inches wide, even to spend a

* Information received while these sheets are under revision for the press, shows that good results are to be expected, and have been in fact obtained; and that there is vitality in this plan, the further development of which will be watched with interest.

single night in a quiet stable. Cattle occupying a car without partitions, unless excessively crowded, and even when far too closely packed to admit of any lying down with safety, can, and actually do, move about by concerted effort, change their position in the car, find their mates and favorites, and obtain some exercise and relief. They support each other against jars and shocks, such as occur in starting and stopping trains, and develop a remarkable degree of discipline and mutual helpfulness and forbearance.

All this would be lost, or much diminished, by the system of compartments, and the loss might go far to counterbalance the gain. Indeed, I was told by one disinterested and intelligent observer, that cattle had been taken out of the compartment car completely foundered, so as to be unable to stand, by a single stage of three hundred miles.

Roomy stalls, affording three feet or three and a half feet to each animal, and assigning eight or ten animals to an ordinary twenty-eight feet car, with suitable manger and watering-trough, good bedding and abundant food, would doubtless give increased comfort, and reduce the loss of weight in transit. If cars so fitted up, mounted on suitable springs, provided with good buffers, and having large axles with long bearings, adapted to high speed, were run rapidly over long routes, there would probably be some saving in shrinkage, and, if so, then a very great gain in the quality of the meat; for the flesh of an animal which, while living, was losing weight, is worth much less, as food, than that of one which was at the time of slaughtering in full and perfect condition. Like the first turn of the screw of the wine-press, the imperative wants of the living animal extract the richest juices and leave the remainder flavorless and poor; and if this self-consuming process is carried to a great extent, the beef that remains is of hardly more worth than a squeezed lemon, or "salt that has lost its savor." * But the loss of weight, or shrinkage, could

* "The application of the substances forming the *albuminous* group, to the support of the animal body, by affording the materials for the nutrition and re-formation of its tissues, needs little explanation. The proportions of the four ingredients of which they are all composed, are so nearly the same, that no essential difference appears to exist among them; and it is a matter of little consequence, except so far as the gratification of the palate is concerned, whether we feed upon the flesh of animals (*syntonin*), upon the white of egg (*albumen*), the curd of milk (*casein*), the grain of wheat (*gluten*), or the seed of the pea (*legumen*). All these substances are reduced in the stomach to the form of *albumen*; which is the raw material out of which the various

not be entirely prevented by any possible system of transportation; and so long as any such loss is sustained, there must be some injury to the quality of the meat, for which there is no remedy but feeding, rest and recuperation at the end of the journey.

Unless the exhaustion has passed all necessary limits, this recuperation would be almost as rapid after a journey by the one mode of transit as by the other, and the resulting gain by the use of even the luxurious cars now under consideration could not, it would appear, be very great.

Of course, such a system of wide separate stalls would be costly, cumbrous and troublesome, and probably wholly in-

fabrics of the body are constructed. But the rule holds good with regard to these also, that, by being made to feed constantly on the same substance, boiled white of egg for instance, or meat deprived of the principle that gives it flavor, an animal may be effectually starved; its disgust at the food being such, that even if swallowed it is not digested." [Carpenter's Animal Physiology, § 158.] Although the term "ozmazome" is less used than formerly, since the fluid so named has been ascertained to be a compound or mixture of several extracts, rather than a definite substance, it still remains a convenient name for the odorous and sapid portion of the juice of beef and other mature viands, and must always be kept pleasantly in remembrance by the charming work of Brillat-Savarin, 'Physiologie du Gout.'

"We see daily great numbers of beef cattle kept on the road during twelve, twenty, twenty-four, and even thirty-six hours without receiving a particle of food! It is contrary to good sense, adverse to the interests of the shippers, and above all injurious to the health of the animals who undergo these privations, and must suffer much in consequence. *The meat from these animals certainly is not worth as much as that from healthy animals; it is often injurious to the health of man, and always less perfectly digested.* (La viande de ces animaux ne vaut certainement pas la viande saine; elle est souvent nuisible à la santé de l'homme, toujours moins digeste.)" [Améliorations à apporter au mode de transporter des animaux par les chemins de fer. Auguste Zundel, Paris, 1870, pp. 31, 32.]

The following, copied from the annual report of the Union Stock-Yards of Chicago, for the year 1873, published in the "Drovers' Journal" of January 3, 1873, where it is quoted with approval from the "Drovers' Journal" of June 14, 1873, referring to cattle which showed that "this self-consuming process" had been "carried to a great extent," says of them, they are "shipped here with little else than the bone-frame and skin to make up the animal, being totally unfit for any practical use in this market. We know of an instance where an animal of this kind that weighed just 1000 pounds, was sold to a city butcher for fifteen dollars. The party who bought this animal realized just five dollars for the hide, losing the entire carcass; and this kind of a result is no doubt often made in handling this kind of stock." [Report for June.] In the same document, in the report for August, the following language occurs: "The great bulk of 'through' Texas cattle, that arrived at these yards during the month, were sold at \$1.25 to \$2.25, and were dear property at those prices, as all our city butchers lost money in handling them." This, while, at the same time, a few lines further on, we read, "Really fine, ripe cattle sold during the month as high as \$6.25; but the great bulk of the sales of cattle of this class were made at \$5.90 to \$6.10."

In view of these facts, I hardly think the energetic comparison of the squeezed lemon too strong. Indeed, it has been strongly confirmed and approved as apposite and just by numbers of experts in the cattle trade.

admissible on economical and practical grounds. It may be adopted in some degree for very fine and valuable animals, but it would enhance the cost of transportation of ordinary cattle out of all proportion to their market value. Just so far as the saving in shrinkage and the augmented value of the animals will compensate shippers for this extra expense, and afford a remunerative profit on the capital employed, will the use of such cars be found practicable and judicious, and to just this extent will they, doubtless, be introduced in time.

Some of the worst abuses at present existing arise from the great disparity of size among the cars of the leading railways which supply our market. Cattle are rarely, if ever, shipped from a distant point through to their ultimate destination in the same cars in which they set out. Herds are concentrated and, to some extent, commingled at such stock-yards as those at St. Louis, Louisville, Chicago and Pittsburg. They move on to Toledo, to Cleveland, to Detroit, to Buffalo, to Albany, receiving accessions from the tributary country through which they pass, and diverge and separate at such points as Buffalo and Albany, for New York, Boston and other markets, and at each relay are forwarded in cars other than those in which they arrived.

These cars differ greatly in dimensions, especially in length. Some are thirty-two feet long by eight feet six inches wide, and six feet six inches high, inside dimensions; some, again, are only twenty-five feet long by seven feet eight inches wide, and six feet high. In most cases, doubtless, more of these small cars are provided to receive a train load of cattle than there were of the larger cars in which they came from the West; but in too many cases shippers are compelled, to their very great injury, to put the seventeen heavy steers which formed a car-load, and found suitable space in a car twenty-eight feet, thirty feet, or thirty-two feet long, into one of only twenty-five feet, to the great discomfort and possible loss of the animals, or submit to ruinous delay, with no assurance of better accommodations at last.*

* It is but fair to say that the very smallest of these cars have just now, upon suitable representations to the officers of a leading railway, been removed from cattle-trains and applied to other purposes to which they are better adapted.

The requirements of a good cattle-car are,—

1. That it should not be less than eight feet wide in the clear, inside ; and eight feet six inches would be better for large cattle.
2. That it should be six feet six inches high in the clear.
3. That it should be not less, nor much more, than twenty-eight feet long inside, since that is the usual length, and uniformity in this respect greatly facilitates re-loading and changing from one train to another.
4. That it should be smooth on the inside, free from angular posts, studs, bars or girders, and from hooks, staples and other projections.
5. That it should be boarded up smooth inside for a width of two feet on the sides, from a point three feet above the floor up to a point five feet above the floor, to afford a fair surface for the animals to rest against, and avoid the sharp corners of open slats, by which they are often cruelly marked.
6. There should be provision for shutting out driving storms on the weather side, in cold weather ; implying, of course, such provision on both sides, to be used at discretion.
7. The riding-springs should be easy, not too easy, but sufficient to obviate all severe jarring.
8. The couplings should be fitted with good buffer-springs.
9. Corners of door-posts should be well rounded, or chamfered.
10. There should be two trap-doors in the roof, to give the attendant access to the cattle in case of need.
11. There should be openings in the ends for ventilation, with doors sliding on the outside, to be closed at the front end in cold and stormy weather.

Cars less than eight feet in width are extremely inconvenient and uncomfortable for large cattle, compelling a constrained, contracted or contorted position of the head and neck, irksome, doubtless, at first, and painful and injurious in the extreme, after long confinement. On at least one railway, the cars are eight feet six inches wide in the clear, and

large cattle are much more comfortable in them than even in a car eight feet wide.*

Bedding.—The propriety, indeed the necessity, of providing bedding of some kind for all neat-cattle, and I believe for horses, hogs and sheep as well, seems to be generally, if not universally, recognized by all railway companies engaged in stock transportation, as well as by shippers. The usual price charged for bedding, so far as my inquiries went, is one dollar per car. For this sum, one hundred pounds of coarse hay or sedge (which is better than fine hay, as it is stronger and less likely to be eaten by the cattle) is supplied to each car, or a quantity supposed to be equivalent thereto of straw, planing-machine shavings, sawdust, or sand. An immense proportion of the cars I inspected were covered to the depth of several inches—sometimes as much as nine inches by actual measurement—with a curious accumulation of strata of all ages, from “eocene” to “recent,” consisting of all the materials enumerated above, with others of unknown origin, all cemented by the droppings of the cattle into a firm but elastic mass resembling kamptulicon. A sprinkling of sand, a quarter of an inch, or even less, in thickness, gives it the tidy appearance of the sanded floor of a London tap-room; and, when care is taken to prevent the formation of deep holes and sharp ridges, and to maintain an even surface, it appears to supply all the conditions of comfort. It is a little appalling, however, to reflect what might be the effect of introducing an animal suffering from any infectious disease into such a nidus for its reception and diffusion.

On some routes, cars used to transport cattle eastward are freighted on the return trip with iron, lumber, coal, or other materials requiring the removal of the bedding at each trip; and in such cases the sprinkling of sand above referred to has to do duty as the sole bedding. It answers to prevent slipping and falling down, and of course to relieve the cattle from the fatiguing muscular exertion which would be necessary on

* *Dimensions of Stock Cars.*—Standard size of stock cars built at the *Boston & Albany R. R.* shops at Allston: 29 feet 9½ inches long, inside; 7 feet 10½ inches wide, inside; 6 feet 2½ inches high, from floor to ceiling. *Canada Southern R. R.*: 32 feet 4 inches long, inside; 8 feet 6 inches wide, inside; 6 feet 6 inches high inside.

a smooth and slippery floor, but gives no protection against cold and no solicitation to lie down.

"Tenez!" said Fleur de Marie, referring to her lodging-house experiences, "l'on dit que la paille est chaude. Eh bien! on se trompe!" And, if even straw is not warm, a sprinkling of sand must be less so.

For long journeys, extending to the legal limit of twenty-eight hours, and especially in cars which contain only sixteen or seventeen heavy cattle, affording them room to lie down at will and in safety, cars unprovided with the secular bedding above described should have at least a hundred pounds of coarse hay.

Railway companies generally, perhaps universally, fix a tariff of transportation, nominally by weight, but practically by the car, for all but the excess over 20,000 pounds,—that is, the freight is reckoned at the rate agreed on for full 20,000 pounds, whether the car is loaded to that extent or not. All excess is charged by weight, but no allowance is made for underweight.

For fine, heavy cattle, under this system, cars twenty-eight feet in length afford suitable space. Sixteen or seventeen head of such cattle, weighing from twelve hundred to fourteen hundred pounds each, form a car-load, and fill a twenty-eight-foot car just about to the point of comfort. They can lie down and get up at will, move about enough for necessary exercise, and when standing they mutually steady and support each other. They are sufficiently close together for warmth in winter, and they do not suffer for air in summer.

But this rule, while suiting well the requirements of the case for large, well-fattened animals, works considerable hardship in its application to light, thin cattle, often full grown, tall and long, and with wide-spreading horns, such as the Texas cattle.

It is obvious that the simple rule of weight, 20,000 pounds to the car, as a minimum, irrespective of the condition of the animals, must do injustice to the lighter animals. The weight is about proportional to the cube of their linear dimensions.

Seventeen cattle, weighing 1,200 pounds each, and 24,400 in the aggregate, in a car twenty-eight feet long, have abo

20 inches each ; and lighter animals, weighing 1,000 or 1,100 pounds each, require about the same space. In fact, seventeen should be the extreme limit for animals of 1,100 pounds weight and upward, and twenty for full-grown cattle of any weight.

There should certainly be so much space that when one lies down, those on each side of him may stand erect, without being forced by the elasticity of a compressed mass beyond, to either fall over him or to trample him under their feet.

If the limit were set at twenty, and the mean weight of a lot of cattle were so little as 900 pounds, the aggregate weight would be 18,000 pounds,—a loss of ten per cent. to the shipper under existing rules. But equity would seem to require the railway companies to make an average of car-loads ; or, in other words, to transport strictly by weight, at all events when the mean car-load is not below 20,000 pounds. In this way, the slight excess of weight in cars loaded with the heavier animals would compensate for the slight deficiency in those loaded with the lighter ones, and justice would be done to all parties.

It need not be objected that such regulations would prove impracticable on account of the trouble they would cause. Hair-splitting refinements would not be insisted on ; but sufficient space would be and should be secured.

Nor need it be said that such a law would be disregarded. Of course it would be often disregarded, without efficient inspection and adequate sanctions ; but this is true of all laws, and is of itself no sufficient objection to any.*

* For fat cattle, the usual limit by weight, 20,000 to 22,000 pounds to a car, insures sufficient space. It gives a car to 14 or 15 animals, weighing 1,500 pounds each ; to 15 or 16 animals, weighing 1,400 pounds each ; to 16 or 17 animals, weighing 1,300 pounds each ; to 17 or 18 animals, weighing 1,200 pounds each. For cattle of all grades, the working of this rule may be seen in the following table. Car twenty-eight feet long.

Number to a Car.	Weight each.	Aggregate Weight.	Width of space to each, in inches.	Area to each, in sq. feet.	Remarks.
12	1,600	20,800	25.8	17.2	Ample.
14	1,500	21,000	24.0	16.0	"
15	1,400	21,000	22.4	14.9	"
16	1,300	20,800	21.0	14.0	Sufficient.
17	1,200	20,400	19.8	13.2	"
18	1,100	19,800	18.7	12.5	Too close.
20	1,000	20,000	16.8	11.2	"
22	900	19,800	15.3	10.2	Over-crowded.
25	800	20,000	13.4	8.9	"

The far too common practice of crowding twenty-three, twenty-four, or twenty-five tall, full-grown steers into a car of twenty-seven to twenty-eight feet in length, is certainly an abuse which calls for suppression.

Twenty-five animals in a twenty-eight-foot car have just $13\frac{1}{10}$ inches each; less than $13\frac{1}{2}$ inches. What farmer, what cottager, would dare to tie up a cow in a stall $13\frac{1}{2}$ inches wide? It is true that the projecting shoulder-blades and hip-bones, which could not be got into such a stall, find accommodation in the yielding flanks of comrades; but all are of necessity in a state of compression which must impede respiration and cause, when continued for eighteen, twenty, or twenty-four hours, great suffering. Probably no one of them would attempt to lie down from the ordinary impulse to seek relief from fatigue.* The instinct of self-preservation is too strong to permit one to lie down so long as he is able to stand. But once down, whether through sheer exhaustion or an incautious attempt to obtain rest, his fate is sealed. To get up again is impossible.

The elasticity of the compressed mass on each side of him, against which his nearest comrades cannot stand up, forces them together across his prostrate body, and, as they could not possibly maintain a leaning position six or seven inches out of the vertical, sideways, they must trample him under their feet, as they would otherwise be thrown down and share his fate.

Even if they were endowed with reason and tender commiseration, the case would be the same; they must trample a fallen comrade to death. Men, however tender, generous and humane, so crowded, could do no otherwise.

A train of cars arrived at the cattle-yards, in Chicago, at 11.45 A. M., on the 15th Sept., 1874, while I was on the platform, by the Chicago, Burlington & Quincy Railroad from Quincy. There were generally twenty-four Texas steers in each car, the cars measuring, inside, 27 feet 2 inches to 28

* Quadrupeds do not suffer fatigue from standing as human beings do. Their four points of support afford so broad a base, that they stand securely without effort; and fatigue results from voluntary exertion alone. There is no fatigue attending the beating of our hearts, or the other organic, involuntary motions of our bodies. It is because an effort of the will is required on our part to maintain our erect position, that standing fatigues us so soon. The oscillations and shocks of a car may occasion considerable voluntary effort to preserve equilibrium in cars not pretty closely packed, and so give rise to severe fatigue, from which they are saved by being stowed more compactly.

feet in length, by 7 feet 9 inches to 7 feet 10 inches in width, and 6 feet 6 inches high in the clear. One car, marked "H. & St. Jo., No. 1950," measuring 28 feet by 7 feet 9 inches inside, contained on arrival twenty-two living steers and one dead one, trampled to a mass of pulp and gore, the eyelids fallen into the empty socket, and the skin torn and bloody. Each of the twenty-three animals, while all were standing, had a space of 14.75 inches. When one had fallen or lain down, each of the others had 15.5 inches, and the elasticity of the compressed mass closed it over the doomed one, whose fate illustrated anew that "to be weak is to be miserable."

All the other cattle in this car and in the other cars of the train came out lively and active, clearing the bridge from door to platform at a bound, and trotting off to the receiving pens with vigor and alacrity.

These wild cattle, from the fenceless plains of Texas, bear such long journeys and such enforced standing better, doubtless, than pampered and more highly-fed animals of domestic breeds. Accustomed to long daily migrations for food and water, trained to endurance, their bones larger, their muscles firmer, their nerves more vigorous, and but little clogged and burdened with superfluous fat, they suffer little from hardships to which good farm stock would succumb. On the other hand, protracted fasting much beyond their habitual period, sometimes causes them to give out suddenly, because their limited store of fat suffices for aliment in place of food to keep up animal heat but for a limited time.

It is remarked by drovers that when they do fail, they fail all at once.

On the 23d of September, I watched the arrival and disembarkation of several stock-trains at Albany, some of which I had seen loaded at Buffalo about twenty-four hours earlier. One train consisted of thirty-five cars, some containing seventeen heavy cattle, some twenty lighter ones. Another train contained twenty-one cars loaded with cattle, and several double-deck cars loaded with swine. I succeeded in counting the horned cattle from nine of the cars in this mixed train, as they came out. There were two with nineteen, three with eighteen, three with seventeen, and one with sixteen head. The mean of the nine was seventeen and two-thirds to a car. As these trains

moved slowly past me to their places at the platform, I carefully observed the attitude, expression and general appearance of their inmates. In most of the cars, one animal, at least, was lying down; in several of them, two or three; and in more than one instance, as many as four. They lay quite at their ease, with their legs folded under their bodies, and some of them were quietly ruminating.

Occasionally I waved my hand briskly at one, and he rose to his feet with ease and alacrity. Those that were standing neither incommoded such as were lying down, nor were in the least incommoded by them. While standing they did not quite touch each other, and, consequently, could be subject to no compression. There was room enough for all; and it is not easy to see what would have been gained, on the score of health or comfort, by giving them more space.

Of more than a thousand head of cattle on these two trains, only one came out of the car with any sign of weakness, illness or fatigue; and this one had slipped on entering the car at Buffalo, so that his hind legs had fallen between the car and the platform, bruising him severely, and making him stiff and lame, and, undoubtedly, feverish and ill at ease every way. This is a too frequent occurrence, and although in many cases the injury may be slight and transient, it too often results in severe suffering to the animal, and in incalculable injury to the beef, and danger to the consumer.

Much of this slipping is quite unnecessary.

The platforms are, for the most part, and ought to be always, nearly on a level with the floor of the cars. The space between car and platform is only a few inches, and need be only three or four inches; and, even if there were no bridge, few cattle would make a misstep save on being required to leave a car backward, or when wantonly urged by the dreaded goad to crowd in when the door is filled with others hurrying in as fast as possible. The danger arising from having to back out of a car can only be lessened, not quite prevented, by keeping the bridges in good order, and securely and accurately placed. Sometimes all the cattle near the door are standing with their heads away from the platform, and it is not easy to get them turned around. Not infrequently the first one, in attempting to back out of the car, pushes away

the loose bridge, or steps off one side of it, if too narrow or placed askew, and gets his leg down between the car and platform. He may indeed recover and get off with a slight scratch and trifling bruise; but the chances are that he will have to bear a painful injury till he reaches his destination at the shambles, when he will be terribly avenged by giving a fevered and diseased carcass to the market.

The bridges at the best, so far as I have observed, are quite loose, not hooked or clamped in any way to the car, and are very easily displaced. In some cases those in use were made originally for doors of less width than are now generally used; and too often they are worn or broken, made narrower by having pieces split off their sides, riddled with dangerous holes, and rendered unsafe by the loss of the cleats required to prevent slipping.

The animals, in general, take their places in the cars with admirable docility and promptness, and seem eager to get in to escape the too-ready prick of the goad, which the drivers (*toucheurs*, "touchers," the French call them), even when not intentionally cruel, apply oftener than necessary, and, by predilection, to the tender skin of the flank in front of the hip.

And here, perhaps, as well as elsewhere, I may say what I have to say about the goad. This implement in some form appears to be absolutely necessary, and when suitably constructed, entirely unobjectionable, although its unnecessary use should always be scrupulously avoided. The object of it is to prompt and accelerate the movements of the animals and produce instant obedience by a sharp, stinging prick, or the apprehension of such an admonition, which is just as efficacious as its administration after a few touches. No great length or size of spur is required for the utmost efficiency, as the finest point, of just sufficient length to pass through the hair and the epidermis and reach the surface of the true skin, will touch a nerve and give a momentary sensation of pain, as transient as the irritation of a fly's foot, but certain to be instantly obeyed. For this purpose a quarter of an inch in length, no larger than a large needle,—of just sufficient strength, in fact, to avoid the inconvenience of frequent breaking, and quite sharp at the point, inserted in a light staff or wand no bigger than a whip-stock,—is quite sufficient.

Something like this is often found in the hands of men about the yards. But in some cases, and notably at Chicago, the drivers are armed with long, heavy poles, much like the "setting-pole" used on canals, sometimes eight or ten feet long, and nearly two inches thick at the spear end, with a spear-head,—I can call it nothing else,—projecting an inch and a half, and not less than half an inch through at the base. A similar spear-point, a little less in length, projects from one side at a few inches from the end, the marks of which are seen in long scratches on the sides and haunches of luckless animals, and remain as a permanent injury to the hides. Standing upon the fences inclosing the yards, which are provided with firm and convenient running-boards, the drivers and men employed about the grounds use this formidable weapon with the prowess and zest of *picadores*, and inflict severe wounds.*

Such wounds are as useless as they are cruel. The immediate pain, or apprehension of pain, which is all that it is useful to inflict, is scarcely greater than from a touch which makes no puncture and leaves no wound, since the nerves are far less numerous in the muscles than in the skin.

But the deep puncture leaves a wound which is incurable in the low condition and excited nervous state of these animals during the few days of life remaining to them; and the result is a running sore or ulcer which it is revolting to contemplate.

It is undoubtedly true that herds of cattle, gathered quite wild upon the savannas, plains and prairies, never subjected

* The subjoined letter from John Cummings, Esq., President of the Board of Trade of the city of Boston, will be read with interest in this connection:—

Boston, Mass., Oct. 16, 1874.

J. C. HOADLEY, Esq. *My Dear Sir*,—In reply to your inquiry regarding the loss caused by transporting live cattle in cars from damage to their hides, I would say that I have for a long period used the hides from such cattle. I have annually used from thirty to forty thousand hides, the value of which to me has been lessened by holes punched in them, and by scratches on the grain, at least fifty cents each. This loss is mainly owing to the waste of leather arising from this cause. • • •

Nov. 4. I have just obtained the number of cattle brought to the Brighton market the last year, and find it to be 167,730.

Most truly yours,

JOHN CUMMINGS.

What an aggregate of suffering, for the most part needless, does this suggest! What nameless dangers to the health of the consumers of meat from animals so lacerated!

to the care of man save to pass under his branding-iron, or to feel his mutilating-knife or his marking-knife in the dew-lap, and just setting out on their long journey, are less easily managed than they become at a later stage. Some degree of violence is necessary to tame them and teach them to obey.

Unquestionably, some degree of self-control is exercised by the men who wield these formidable lances. It is needless to say, that the animals pierced and lacerated by them at any one time are few in number compared with those which pass unharmed.

But passing through many successive yards, and at least twice running the gauntlet of the spears at each yard, in unloading and reloading, and often in moving from one inclosure to another, they become like the veterans of many battles, save that their injuries do not have opportunity to heal, and for scars they show fresh or suppurating wounds. There can be no sufficient reason for allowing the use of so terrible a weapon, since the comparatively harmless spur is to the full as efficient.

It cannot be too strongly stated, nor too often reiterated, that whatever treatment is injurious to the health and comfort of the living animal, is prejudicial to the quality of his flesh as food, and hurtful and dangerous to those who eat it.

Even terror, although of no long continuance, such as that resulting from witnessing the slaughter of other animals, or the smell of fresh blood, or receiving with uncovered eyes several successive blows of an axe before there falls one of sufficient force, with well-directed aim, like the fist of Entellus, to produce insensibility by concussion of the brain, may perhaps affect the flesh by alteration of the secretions, and may, it is said, in some cases render it absolutely poisonous.

Humane methods of slaughtering are not our present theme, but this subject is here referred to as an illustration of the pernicious effects of violence and abuse during the journey to market.

Undoubtedly these ill effects would pass away after a longer or shorter period of rest and generous feeding, but this cattle rarely get, although nothing can be more urgently demanded by every consideration of public health and safety. Do what we may to ameliorate the conditions of travel, they can

never arrive at the market in perfect condition for the abattoir. They must, of necessity, be more or less fatigued, impoverished, excited and disordered, and there should always intervene a period of rest and careful feeding and attendance, to bring them back to perfect condition before they should be allowed to go to the shambles. If too far gone with disease or exhaustion to be brought back to healthy life, their use for food should be carefully and effectually guarded against, at whatever cost. If, although less exhausted, they do not immediately thrive, they should be *therefore* kept until they do, for only when gaining, or at least holding their own, can their flesh be in the best state for food. I cannot estimate the effect of such a quarantine upon the cost of meat in our market. Sagacious butchers in smaller cities, as, for instance, in Manchester, N. H., find their account in buying cattle several months in advance of their requirements, and feeding them in fresh pastures during the season and in warm sheds in winter, the gain in weight affording a profit on the cost of feeding.

Perhaps in the vicinity of Boston the vast herds which would require such care could not obtain it at admissible cost; but something in this direction should certainly be done, and enforced by appropriate laws and efficient inspection.

The very worst phase of the present system, perhaps, is the mode occasionally adopted of removing cattle from the cars fifty miles or more before they reach the market, and driving them the remainder of the way, with little rest and no food, save such as they can crop by the dusty roadside as they go. Such hardly-entreated animals set out on this death-march already fatigued, famished and weakened by a journey of days or weeks in the cars, and they arrive wearied, foot-sore and fevered, with the last ounce of available vitality sucked out of their juiceless fibres, and are fit only to avenge upon society, through such of its members as may have been guilty only of apathy,—but, being guilty of that, guilty of all,—the cruel hardships to which they have been subjected.*

* Mr. J. Battersby of Albany, of fifty years' experience in business as butcher, says, that he keeps all cattle received from the West from three to six days, till they eat well, and get entirely rested; and that if slaughtered immediately, their flesh is feverish, and not wholesome food.

To this practice, the proposed period of rest, refreshment and inspection before slaughtering would put a stop or supply a remedy. Cattle might still be driven to market, and suffer by the journey, but they would have to be brought again into condition before they could find their way to the stalls of our markets.

Until something like this is done, we shall always be liable to spend our money for that which is not *meat*, "and our labor for that which satisfieth not," and to find in the costly viands on our tables, instead of the refreshment and vigor we have a right to expect, if not virulent disease and sudden death, at least the seeds of maladies which result from IMPERFECT NUTRITION.

TRANSPORTATION OF SWINE, SHEEP AND HORSES.

Transportation of Swine.

This branch of our subject will call for no extended remark. The disposition and temperament of these animals adapt them well to transportation. It was the saying of a railway official of large experience and keen observation, whose pithy comments I have more than once had occasion to recall, that "a hog is the best of travellers, and altogether the most serene, contented and happy being connected with a railroad in any capacity." They do best when pretty closely packed, as they are then more quiet, and are less likely to crowd together, one on top of another, for warmth in cold weather. Great mortality sometimes arises from this cause, and, strange to say; oftenest in roomy yards, where there seems to be no reason for it save the attraction of warmth, which leads those still standing to lie down upon such as are already lying down, until those at the bottom of the heap are stifled for want of air.

They would suffer greatly from exposure to the sun in summer, but their pens are almost always covered, and the cars also afford them shelter.

Their own fat provides abundant aliment to keep up their animal heat; and their quiet, inactive temperament, calls for but small quantities of food to supply the waste attending muscular exertion. It is now the common practice to wet them at all stopping-places during warm weather; and if this is ever neglected it should be enforced in all cases.

The greatest injury they sustain is from fighting among themselves; and this is chiefly done when unloaded for feeding and watering, and while the cars are standing still. The motion of the cars appears to quiet them, and the higher the speed the sooner do they subside into repose, and the more contented do they remain. A train of twenty-five cars loaded with hogs, swept past me at thirty-five miles an hour, a few miles out of Chicago, and almost all the animals were lying down and all were quiet. There was no fighting among them.

They sometimes slip and spread their hind-legs apart, causing great injury to the hams and doubtless severe suffering to themselves; and so far as this accident is due, as it too often is, to ill-arranged and defective landings and bridges, it should be carefully guarded against. The danger is greatest in wet and icy weather, and would be far more serious than it is were not the passages generally under cover. Messrs. John P. Squire & Co. were obliged, on account of the impossibility of obtaining land suitably located adjacent to the railroad, to build their new and excellent swine-sheds, at Buffalo, at a little distance from the loading platform. The passage is planked and every precaution is used, but the distance is unfavorable, and some injury, it is said, arises from this slipping and spreading. The pens, yards and passages are kept admirably clean; all litter is swept out and carted away after each occupancy; not a barrow-look could be gathered from the entire premises.

It seems to be conceded on all sides, that in the case of these animals, pretty long stages and high speed—with frequent wetting in warm weather and good and sufficient bedding in winter—are not only harmless but beneficial, as they are quiet while in motion, and receive their principal injury in loading and unloading, and by fighting in their pens.

High speed is doubly important with them, as their journey is thereby shortened and rendered more quiet while it lasts.

The law of the United States should be modified, so far as it relates to swine, as there is no doubt that a journey of thirty-six hours without unloading will cause them less injury

and less suffering, than more frequent stops for food and water. Rest they get in the cars.

This business has grown to very large proportions within a few years. Some statistics concerning it will be found in succeeding pages.*

Transportation of Sheep.

The sheep-folds at Buffalo and Albany, as will be described,† are admirable, apparently perfect. The small and nearly uniform size of these animals, their gentle, inoffensive nature, and the soft bed afforded by their own fleece, unless recently shorn, all conspire to make railway transportation remarkably free from discomfort for them; and since human beings, with all possible appliances of luxury and ease, can hope for no more than not to be intolerably uncomfortable on a journey by rail, so much ought to suffice for sheep.

It is said, however, that they are the most difficult animals to handle of any that are transported by rail. Sometimes, for no apparent reason, they will all huddle together at one end of a car by no means crowded, by which means one or more will be suffocated. It is said that the deaths from this cause among the sheep received at Brighton will average one to a car-load, which may be called one per cent. For this it is not easy to point out a remedy, as long as sheep remain "silly"; *but overcrowding can be and should be avoided.*

Abuses and avoidable hardships, if they exist, as they doubtless do to some extent, must be exceptional and occasional, not the faults of the system, save inasmuch as the system does not include efficient inspection by competent men acting in the interests of society, of humanity, and of the animals.

Transportation of Horses.

This subject, although in terms included in our theme, is really foreign to the matter with which we are here chiefly concerned, which is the transportation of animals destined for the supply of our markets, considered with regard to the public health and the public morals, and also as a question of

* See p. 112, *et seq.*

† Pages 126, 127.

cost, all things being taken into account,—shrinkage, loss and deterioration.

The fine qualities of this noble animal procure for him more consideration and better treatment than is generally afforded to the patient bovine race, to silly sheep and sluggish swine. It is common to see the upper part of their tails tied up in canvas, and this protection afforded to the hair extends also to the skin which would otherwise suffer, as in horned cattle, by painful abrasion.

I cannot speak with much assurance on the subject, but I derived the impression from inquiry and some observation, that while they may sometimes undergo avoidable suffering and privation, the general attention to their necessities, wants and comfort is reasonably satisfactory. But here, as elsewhere, faithful inspection would do no harm, although it must be admitted that it is not imperatively called for as it is in the case of beef (whether dressed or on the hoof), sheep and swine.

BOSTON LIVE-STOCK MARKET.

TABLE I.

Number of car-loads of cattle during the year 1873, . . .	9,912	
Mean number of cattle to each car,	16.92	
Mean weight of each car-load,	22,375	lbs.
Mean weight per head,	1,322	lbs.
Number of cars in 1873 containing 12 to 16 head per car, . . .	7,862	
Mean aggregate weight per car-load,	22,400	lbs.
Mean weight per head,	1,401	lbs.
Number of cars containing 17 head per car,	411	
Mean aggregate weight per car-load,	22,525	lbs.
Mean weight per head,	1,325	lbs.
Number of cars containing 18 head per car,	398	
Mean aggregate weight per car-load,	22,508	lbs.
Mean weight per head,	1,250.5	lbs.
Number of cars containing 19 to 20 head each,	349	
Mean aggregate weight per car-load,	22,325	lbs.
Mean weight per head,	1,145	lbs.
Number of cars containing 21 to 22 head per car,	332	
Mean aggregate weight per car-load,	22,050	lbs.
Mean weight per head,	1,025.5	lbs.
Number of cars containing 23, 24 or 25 head,	291	
Mean aggregate weight per car-load,	22,800	lbs.
Mean weight per head at 24 per car,	950	lbs.

*Graphic Representation
Showing the Number and Weight of the
Several grades of Cattle received at
the Boston Live Stock Market in the
year 1873. Mean weight per head of
each grade, and ratio of the number
of each grade to the whole number.*

Cattle — 1873.

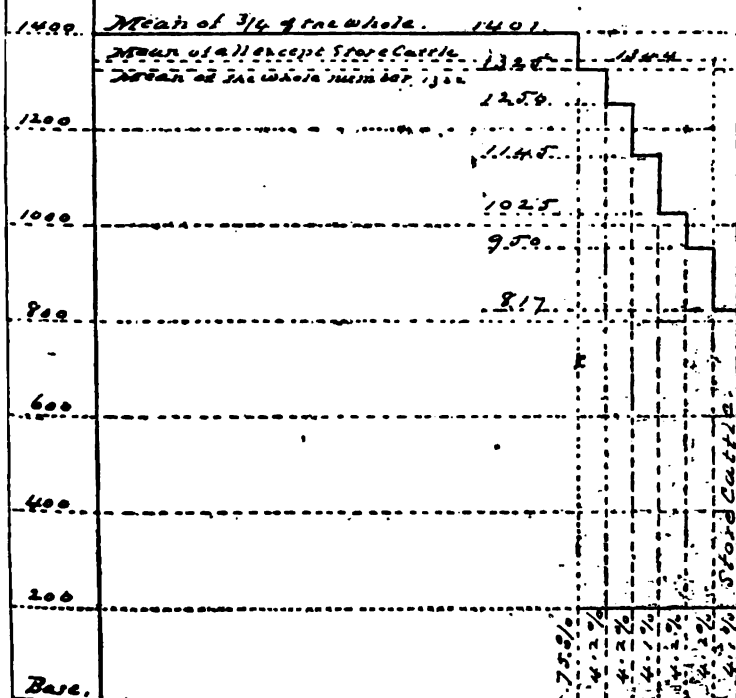


TABLE NO. II.

Showing all the Animals received at the Boston Live-Stock Market, annually, for Thirteen Years, 1862-1874.

YEARS:	Beef Cattle.	Veal Calves.	Sheep and Lambs.	Fat Hogs.	Shoats and Pigs.
1862, . . .	98,218	10,000	229,198	55,000	46,000
1863, . . .	110,815	16,005	250,597	68,891	22,950
1864, . . .	108,836	16,570	302,350	53,372	15,759
1865, . . .	117,866	17,795	341,331	70,329	29,108
1866, . . .	118,185	10,205	431,218	84,909	26,210
1867, . . .	107,866	12,387	411,940	96,401	10,274
1868, . . .	110,009	13,380	493,085	127,550	10,443
1869, . . .	129,353	13,000	413,404	145,200	23,818
1870, . . .	124,592	16,000	450,997	168,802	20,528
1871, . . .	129,247	13,230	487,065	338,027	13,280
1872, . . .	157,366	17,852	412,217	592,727	9,298
1873, . . .	167,730	19,358	414,026	838,203	16,304
1874, . . .	163,311	17,670	363,488	561,937	26,324
Totals, . .	1,643,394	193,452	5,000,916	3,201,348	270,296
Means, . .	126,415	14,881	384,686	246,258	20,792
1862, '63, '64, .	105,956	14,192	260,715	59,088	28,236
1872, '73, '74, .	162,802	18,293	396,577	664,289	17,309

NOTE.—The diminished number of shoats and pigs in ten years, while the population has largely increased, probably reflects the decline of the habit of keeping domestic animals, already referred to.

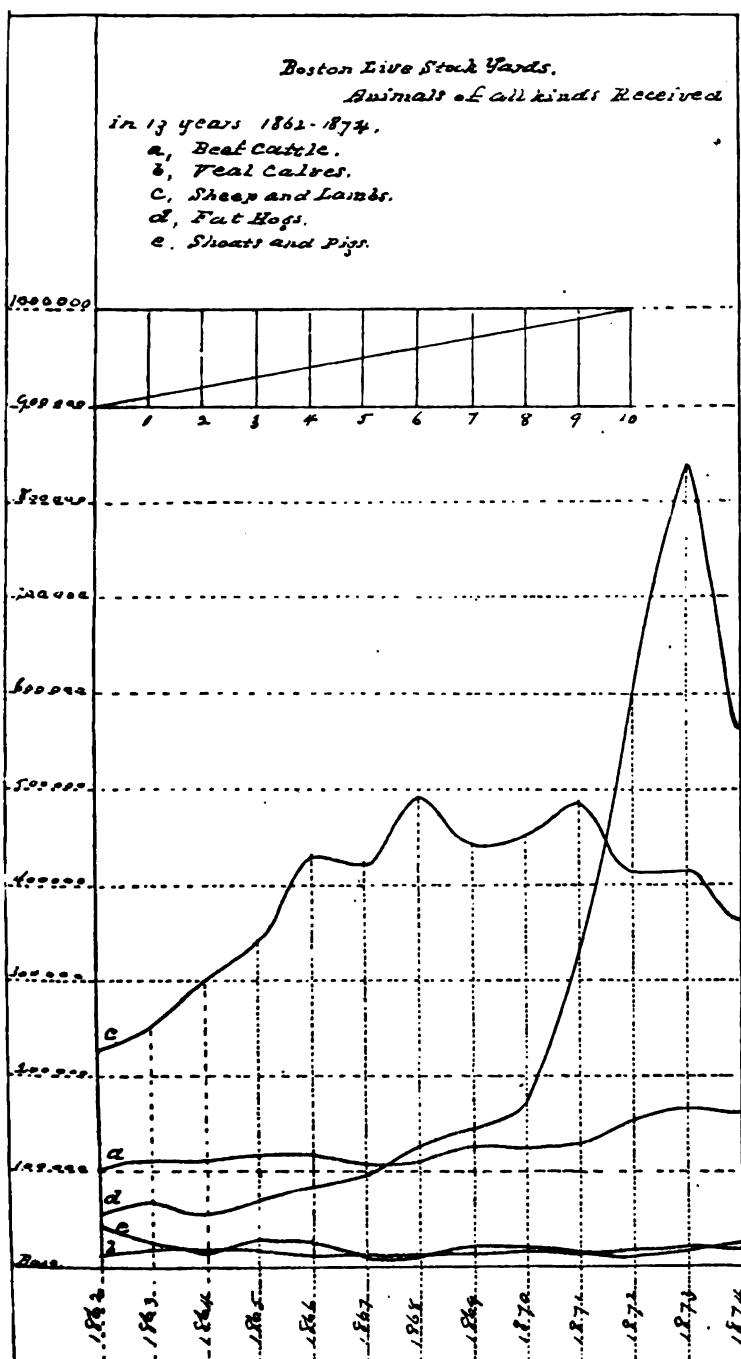


TABLE No. III.—Showing the number of head of Beef Cattle from the several sources of supply, for each year for Thirteen Years, 1862–1874.

Y E A R S .		Massachusetts.	Maine.	New Hampshire.	Vermont.	Northern New York.	The West, including Albany.	Canada.	Total.
1862,	.	3,660	12,502	9,958	31,206	3,602	35,405	1,885	98,218
1863,	.	4,436	20,266	15,165	28,481	3,365	34,944	4,158	110,815
1864,	.	6,064	10,292	13,213	33,353	5,951	37,666	2,297	108,336
1865,	.	4,033	11,256	9,509	31,020	8,402	38,233	15,413	117,866
1866,	.	2,925	9,879	5,496	20,533	4,768	63,661	5,923	118,185
1867,	.	2,365	9,079	5,957	10,438	4,411	63,059	3,557	107,866
1868,	.	2,780	10,574	7,209	18,426	4,327	61,688	5,005	110,009
1869,	.	2,283	10,792	6,084	13,966	4,156	87,421	4,651	129,353
1870,	.	2,018	19,267	8,248	17,191	4,462	64,979	8,427	124,592
1871,	.	1,336	16,505	5,224	12,922	1,915	88,079	3,266	129,247
1872,	.	1,734	2,992	5,336	21,720	5,323	115,306	4,955	157,366
1873,	.	1,589	942	2,767	14,850	5,816	138,878	2,888	167,730
1874,	.	789	4,514	4,837	10,856	4,045	136,737	1,533	163,311
Totals,		36,012	138,860	99,003	273,962	60,543	971,056	63,958	1,643,394
Means,		2,770	10,681	7,616	21,074	4,657	74,697	4,920	126,415
Means for 1862, 1863, 1864,		4,720	14,353	12,779	31,013	4,306	36,005	2,780	103,956
" " 1872, 1873, 1874,		1,371	2,816	4,313	15,809	5,061	130,307	3,125	162,802

TABLE No. IV.—Showing the Number of Sheep and Lambs received annually from each of the several sources of supply, for Thirteen Years, 1862-1874.

Y E A R S.		Massachusetts.	Maine.	New Hampshire.	Vermont.	Northern New York.	The West, including Albany.	Canada.	Total.
1862.	.	14,878	31,169	22,946	95,495	11,846	20,927	81,937	229,198
1863.	.	18,548	32,723	35,060	91,614	16,992	19,575	86,090	250,597
1864.	.	29,882	28,117	40,463	99,284	21,227	57,826	26,051	302,850
1865.	.	16,802	24,491	37,913	123,457	36,341	26,959	75,368	341,331
1866.	.	24,348	27,039	50,241	204,004	40,144	55,999	29,443	431,218
1867.	.	15,390	14,137	46,696	165,473	28,068	105,695	36,476	411,940
1868.	.	18,300	9,174	41,965	173,802	39,733	167,410	42,701	493,085
1869.	.	14,998	10,494	39,638	125,826	35,809	132,524	54,115	413,404
1870.	.	12,785	10,821	38,874	145,315	49,587	100,471	93,144	450,997
1871.	.	14,019	19,878	43,542	115,721	43,680	150,849	99,376	487,065
1872.	.	13,528	6,667	23,308	80,861	31,258	167,479	89,116	412,217
1873.	.	17,750	4,243	26,373	87,716	44,288	172,308	61,348	414,026
1874.	.	8,981	14,111	29,151	65,893	47,410	151,615	46,327	363,488
Totals,	.	220,204	233,064	476,170	1,574,466	446,383	1,329,137	721,492	5,000,916
Means,	.	16,939	17,928	36,629	121,113	34,337	102,241	55,499	384,686
Means for 1862, 1863, 1864,	.	21,101	30,670	32,823	95,464	16,688	32,610	31,359	260,715
" " 1872, 1873, 1874,	.	13,420	8,340	26,277	78,157	40,985	163,801	65,597	396,577

TABLE No. V.—*Cattle shipped to Boston from Chicago in Refrigerator Cars, Monthly, in the year 1874.*

[WEIGHT OF DRESSED BEEF.—The aggregate for the year is from the books of the Company. The monthly aggregates are computed from live weight, by established ratios.]

MONTHS.	No. of Car loads.	Number of Head of Cattle.	Mean Live Weight, each—pounds.	Aggregate Live Weight, monthly—pounds.	Per cent. of Dressed Beef to Live Weight.	Estimated Weight of Dressed Beef, monthly—pounds.	Mean Weight of Beef per Car load—pounds.
January, .	42	838	1,340	1,122,830	58.50	656,856	15,639
February, .	26	698	1,377	956,400	58.64	560,833	21,571
March, .	38	1,005	1,388	1,394,560	58.68	818,328	21,535
April, .	43	1,102	1,382	1,523,370	58.66	893,609	20,781
May, .	53	1,085	1,366	1,481,840	58.60	868,358	16,384
June, .	50	1,380	1,349	1,861,900	58.54	1,089,956	21,799
July, .	39	1,018	1,335	1,359,440	58.48	795,001	20,385
August, .	55	1,364	1,248	1,702,210	58.02	987,622	17,957
September, .	52	1,745	1,222	2,132,540	57.89	1,234,527	23,741
October, .	58	1,499	1,227	1,838,610	57.94	1,065,291	18,362
November, .	56	1,707	1,336	2,279,760	58.47	1,332,976	23,803
December, .	50	1,139	1,280	1,458,650	58.18	848,643	16,973
Aggregate, .	562	14,580	1,311	19,112,110	58.35	11,152,000	-
	-	-	-	-	58.63	11,206,270	19,940

It will be observed by the diagram on p. 113, that a rise in the line representing the number of sheep per annum is in general associated with a depression of the line representing the number of cattle, and *vice versa*.

For instance, the line of sheep, 1866 to 1872, is convex upwards; that of cattle for the same period of time, convex downwards. In 1868, the cattle line is low, the sheep line high. In 1869, sheep fall, cattle rise; in 1870 and 1871, sheep increase, cattle decrease; in 1872 and 1873, sheep fall off, cattle more than make good the deficiency.

In one respect, the comparison of these two lines is deceptive, or rather, stands in need of correction. The lines both represent numbers of animals; and twenty sheep are only equal to one bullock.

Whosoever examines Table No. I. with care, will be impressed with the evidence it affords of the extremely liberal and exceptionally good quality of the beef supplied to our markets. The detailed statement for the year 1873, shows

that exactly three-fourths of the number of cattle, constituting eight-tenths of their weight, weigh over 1,400 pounds each, less than sixteen forming a car-load.

Again, seven-eighths of the whole number, aggregating 91 per cent. of the total weight, have an average weight of 1,372 pounds, averaging sixteen and a quarter to a car; while the whole number received (after taking out "store-cattle," two-year-olds and yearlings), 96 per cent. of the total number, and more than 97 per cent. of their weight, show a mean weight per head of 1,344 pounds, and a mean number of sixteen and two-thirds to a car-load. These are heavy cattle, although many of them of course fall much below the average. The lowest mean weight of any class, admitted to this last statement, is 950 pounds, and this grade forms but a little over four per cent. of the total. Included in the first, or highest grade, which constitutes three-fourths of the whole, are many very heavy cattle, weighing 1,500, 1,600, 1,700, 1,800 and over, for which there is a large and constant demand. Many of the finest come from the valley of the Connecticut, where they are raised and fattened for the sake of the manure they yield to the tobacco-fields. Nearly all the comparatively small number of cattle from "Massachusetts," come from this source, and their value is relatively much greater than their number.

Besides the animals brought alive to our market, there is a very important addition in the quantity of dressed beef, brought principally from the West, and largely from Chicago, forming not less than one-ninth of our whole supply, and carrying up the total to the equivalent of 20,000 head per annum for 1873 and 1874. The quality of this dressed beef ranges from very good to very vile. Much of that brought in the winter in open cars, can only be regarded with extreme suspicion, often deepened to extreme aversion. The low price at which it is offered, as low as four cents per pound, while it may tempt the poor, the thoughtless, the penurious and the unscrupulous, is sufficient to condemn it in the eyes of all who can form an intelligent opinion.

Only cattle of the very lowest grade, poor and wasted to the limits of bovine endurance, can be bought at such a price in Chicago,—less than two cents per pound,—as to permit

the sale of their carcasses in Boston at four cents; and what this grade of cattle is may be learned from the extract from the "Drover's Journal" in the note on p. 94.

Nor is this the worst, since there is no reason to doubt that among cattle so emaciated, all forms of disease which are developed and aggravated by imperfect nutrition, prevail to a great extent, or that among them are many which are in the last stages of disease.

This class of dressed beef should be carefully watched, inspected both here and at the place of shipment, and in case of real danger, warning, at least, should be given to the community against its use.

The other class,—which has nothing in common with the above, save the single fact that it is dressed at a distance and brought to our market in the quarter,—comes in refrigerator cars.

NOTES AS TO THE QUALITY OF BEEF CATTLE,
FROM THE SEVERAL "SOURCES OF SUPPLY," AND BY DIFFERENT "ROUTES."

Massachusetts.—Almost entirely from the Connecticut River Valley, about Greenfield. Quality excellent; generally large, heavy cattle, weighing from 1,400 to 1,800 pounds, and, *therefore*, what butchers call "good," whether really so or not; and almost of necessity little injured by fatigue and starvation in transit, being close by, and *therefore* really good,—*excellent*, whether heavy or light, fat or less fat,—unwasted, unsqueezed; *not* like the beef after making beef-tea, such as results from starvation.

Maine.—Most of the "store cattle," yearlings and two-year-olds, come from Maine. These are all, or nearly all, included in the lightest grade in 1873; 817 pounds mean weight; 25 and over to the car. But Maine sends, also, some fine cattle, and at times some very poor. The severe drought a few years ago, caused the shipment to market of cows, oxen, cattle of all kinds, mostly poor. Then the supply fell off, and has been almost nothing until last year, when it revived in some degree. The Maine supply is almost uninjured in transit.

New Hampshire.—Sends us many excellent cattle, and some small and light; but all are uninjured, or comparatively so, by travel.

Vermont.—Much like New Hampshire, but more important to us, because the supply is larger. Some of our heaviest beef comes from Vermont, and it all belongs to our "home supply," being within the circuit of short transit.

Northern New York.—Much as New Hampshire and Vermont. These cattle come to us instead of going to New York City, on account of the facilities for transportation,—although New York's need is as great, on the whole, as that of Massachusetts.

Canada.—Taken here, out of its turn, because belonging to our "home supply," and coming without destructive shrinkage, by starvation and fatigue. Some of the very finest beef ever seen in Boston (and therefore equal to any), comes from Canada,—from the Stanstead Plains. Some poor, i.e., not fat beef, comes also. On the whole, the quality is good, whether fat or not.

Home Supply.—New England, New York and Canada: About one-sixth of our supply (but less, if we take out store cattle, which are kept a year or two before slaughtering,—4.1 per cent. out of 16.3 per cent., leaving 12.2 per cent., or less than one-eighth,—say one-eighth instead); but vastly more than one-eighth in *value*: first, because above the mean weight per head; and, second, because it is unwasted, and therefore of *full* value.

The West.—Albany is included, because nearly all the cattle bought there for our market have already been brought from several hundred to several thousand miles,—sometimes two thousand miles,—and are of the same quality as all the other Western cattle,—originally good, bad or indifferent,—but mostly originally good.

The supply by refrigerator cars is now a very little less than that from Massachusetts, Maine, New Hampshire, Vermont,

Northern New York and Canada, all combined; and taken with these sources, goes to constitute about 21 per cent., or over one-fifth of our supply.

As to Railroads, etc., bringing our Supplies.

Boston & Albany.—Brings from the West, and in part from the Connecticut Valley.

Eastern.—Brings from Maine.

Lowell.—Brings from Vermont and Canada.

Fitchburg.—Brings from Vermont and Canada, from Deerfield, Mass. (Connecticut River Valley), and from the West. If any animals come from Canada by this route, they are all credited to "The West," and they are few.

By Boat.—Animals come from Bangor, Maine.

On Foot.—Cattle mostly from our immediate neighborhood.

STOCK-YARDS.

In no way, perhaps, can one obtain so clear an idea of the magnitude of the cattle-trade, of the enterprise, capital, capacity, and skill employed in conducting it, of the improvements already made, and of the abuses to which it is still liable, as by carefully studying it in the great stock-yards on the long routes from the West, the South-west and the South, to the great markets on the Atlantic.

My own observations extend only to the stock-yards at Chicago, Buffalo, Albany, Brighton and Watertown. These yards were selected for examination because, in the few weeks at my disposal, it was necessary to confine my attention chiefly to a single route, and the route here indicated seemed as important as any to the supply of our markets.

The new yards at St. Louis are said to be convenient, well arranged, and well managed, and I regretted my inability to visit them. It is quite likely that they excel in some particulars, since they are among the newest; and the rule holds pretty generally good that the latest show certain improvements upon those of earlier date.

The Union Stock-Yards, Chicago.—These fine yards are owned by a company incorporated under the laws of Illinois, by special charter, in 1864, with a capital of \$1,000,000, of which amount \$925,000 was subscribed by nine railway companies. They were commenced in June, 1865, and opened for business in December of the same year. Their territory comprises three hundred and forty-five acres, of which more than one hundred and twenty are now occupied by pens, and the streets and lanes communicating with them; forty-seven acres are set aside for the hotel and other buildings, and one hundred and seventy-six are reserved for new pens. Twenty-one miles of railway connect the yards with all the important railroads centering in Chicago, and by skirting three sides of the space covered by pens far enough from their borders to afford double frontage, furnish great facilities for receiving and shipping animals of every description usually transported by rail. Two artesian wells, one of them one thousand and thirty-two feet in depth, the other eleven hundred and ninety, furnish an abundant supply of excellent water, always flowing into capacious and accessible troughs, to which all animals within the yards have free access. Thirty-five miles of drains carry off the surface water; ten miles of streets give access, by means of over three thousand gates, to over two thousand open pens for cattle, one thousand covered pens for hogs and sheep, and to stables containing stalls for three hundred and fifty horses. The yards have capacity for twenty-seven thousand head of cattle, one hundred thousand hogs, and fifty thousand sheep. A large hotel, the "Transit House," fully up to the requirements of its public, where can always be found what cannot always be obtained elsewhere in Chicago,—as good beef as can be got in Boston or New York; a fine range of buildings for the officers of the company and of persons engaged in the trade; a national bank, affording all needful facilities for transacting the large financial business of the market; and a newspaper, "The Drover's Journal," constitute, altogether, a very complete equipment.

Receiving pens equal in length to an ordinary car, about 30 feet, and of suitable width to give ample room to a car-load,

are ranged along the platforms, and communicate on the other sides with lanes leading by a system of streets, lanes and gates, to the weighing-scales, and to the feeding and storing yards.

These are of somewhat various forms and dimensions, but are generally about equal to 100 feet square, or 10,000 square feet, say a quarter of an acre, and afford a space equal to ten feet square to each of the one hundred cattle,—four or five car-loads,—usually put into them at once.

Of the watering-troughs with which they are all supplied, I have already spoken. Feeding-troughs, or mangers, extend around three sides of each yard, affording about three feet in length to each animal, and are profusely supplied with good hay. Col. John B. Sherman, the energetic superintendent of the yards, told me that their rule was to supply twenty pounds of hay per head every twelve hours,* and the appearance of

* Neat-cattle require, to keep them in good health, of good hay, one-sixtieth of their own weight, and, for full feed, twice that quantity, or one-thirtieth of their own weight; or an equivalent quantity of other food (MM. Moll et Gayot, "Connaissance General du bœuf," p. 45, as cited by M. Auguste Zundel, *Améliorations à apporter au mode de transporter des animaux par les chemins de fer*, pp. 32, 33; Paris, 1870). As to the "equivalent quantity of other food," M. Zundel sets it, for oats, at half the weight of hay, remarking that oats are digested by animals of the bovine race even better than by horses, as the lignin, or cellulose, is to a greater extent reduced to an assimilable form by their longer and slower digestive process.

The following analyses of hay—for which, with the references, I am indebted to Dr. H. P. Bowditch—are here inserted for reference, as they are not, I find, very generally accessible:—

ANALYSIS OF HAY, BY STÖHMAN.

	1st.	2d.
Albumen,	10.69	9.94
Cellulose,	27.21	24.08
Fat,	2.99	3.96
Non-nitrogenous extractive matter,	50.07	54.73
Ashes,	9.04	7.29
	<hr/> 100.00	<hr/> 100.00

These specimens must have been dried previous to the analysis, since they contained no water, which must have formed fourteen to fifteen per cent. of their weight in ordinary commercial condition.

The albumen and fat are nutritious,—the fat more so than the albumen, in the ratio of 2.4 to 1. Of the cellulose, an indefinite and probably variable proportion is digested,—a larger proportion, probably, by ruminating animals than by horses.

The extractive matter is probably only another form of expression for residuum of indeterminate character, save that it is soluble in water. The ashes are non-nutritive.

In the "Zeitschrift für Biologie," vol. VI., p. 218, a number of analyses of hay were to be found, but nothing more definite than the above.

the yards indicated as much, being abundantly littered with fresh hay, carried by the cattle away from the mangers, and dropped profusely on the ground.

The fences are boarded on both sides of the posts with horizontal strips placed a few inches apart; and a capping of wide, strong plank securely fastened on top affords a good walk around the yards. The only drawback is the necessity of descending at each of the numerous gates,—an incon-

The following analyses of oatmeal and Indian-meal are from Carpenter's "Animal Physiology," § 164, where they appear in a table with other articles of food:—

	Water.	Albuminous substances.	Starch, sugar, etc.	Fat.	Salts.	Carboniferous.*	Nitrogenous.	Total nutriment.
Oatmeal,	15.0	12.0	62.	6.0	3.0	76.4	12.0	88.4
Indian-meal,	14.0	9.0	65.	8.0	1.7	84.2	9.0	93.2

* "The value of the fat is stated in this column according to its *heating* equivalent of starch, which is larger in the ratio of 2.4 to 1. Hence, in the last column, the proportion of nutriment in aliments containing fat comes to be greater than the weight of their solids would indicate."

The following analyses—drawn from "How Crops Grow," by Professor S. W. Johnson, of the Yale Scientific School—are by Wolff and Knop (Knop's "Agricultur-chemie," 1868, pp. 715, 720):—

SUBSTANCES ANALYZED.	Water.	Organic matter.	Ash.	Albuminous substances.				Crude fibre.	Fat.
				Albuminous substances.	Carbo-hydrates.				
Meadow hay, medium quality,	14.3	79.5	6.2	8.2	41.3	30.0		2.0	
Timothy,	14.3	81.2	4.5	9.7	48.8	22.7		3.0	
Straw,	14.3	80.7	5.0	2.5	38.2	40.0		2.0	
Wheat straw,	14.3	80.2	5.5	2.0	30.2	48.0		1.5	
Oats,	14.3	82.7	3.0	12.0	60.9	10.3		6.0	
Maize,	14.4	83.5	2.1	10.0	68.0	5.5		7.0	

The "ash" is equivalent to the "salts" of Carpenter; the carbo-hydrates include fat, starch, sugar, pectin, etc.; "crude fibre" is impure cellulose, or woody fibre; "fat" includes fat proper, wax, chlorophyll, and, in some cases, resins. Columns $1 + 2 + 3 = 100$. Column 2 = columns 4 + 5 + 6, except in the case of oats, where there is a slight discrepancy (perhaps the 60.9, in column 5, should be 60.4: this is conjectural).

It would appear, from an examination of these tables, that the practical rule for the nutritive value of oats—twice that of an equal weight of hay—is not far wrong; but ruminating animals require, as a part of their food, hay, straw or grasses having long stems, to afford a basis of rumination.

venience obviated in some other yards by plank bridges, slightly raised, over the gates.

The yards, pens, and lanes are floored with plank, and, being generally covered with two or three inches of litter, largely composed of clean hay, are comfortable in good weather, but rather slippery in the wet.

After two or three hours, having eaten all they desire, plenty of hay being still left in the mangers, the cattle lie down, for the most part, and ruminate with the air of placid enjoyment characteristic of their race, and present a perfect type of rest, contentment and peace.

But few of the cattle-yards here are furnished with sheds. To suggestions on this subject the reply is, that few of the cattle received at Chicago have ever seen any shelter whatever, even that of a tree, and cannot require sheds. Yet there can be little doubt that during a large part of the year the protection which sheds would give from rain, snow and chilling winds, and from the sun, would greatly promote their comfort and health, reduce the consumption of food and improve their condition.

Cows are generally kept apart from other cattle, and, as they are comparatively few in number at most seasons of the year, they are placed in smaller yards, often in sheds. Calves and young animals are also kept apart from animals fully grown.

Cows with sucking calves are placed in distinct compartments, and not unfrequently the playful gambols of the calves and the natural solicitude of the cow were pleasantly suggestive of country farm-yards, and would grace a pasture after the manner of Gay.

On the whole, an unmistakable air of comfort, contentment and well-being pervaded the place, which not even the feeling that bad weather would alter it for the worse, could quite destroy.

The pens for swine are roofed, and tolerably well kept. The platforms, with double stages to correspond with the double decks of the cars, for loading and discharging, are safe and commodious. The supply of food and water is ample.

The sheep-folds are spacious, airy, well arranged and convenient, and, although less conspicuously clean and attractive

than the new sheep-folds at Buffalo and Watertown, give no ground of complaint.

The great extent of these yards, and the vastness of the transactions which take place in them, make it necessary to drive the animals, especially neat-cattle, a considerable distance, from the receiving-pens to the feeding-yards, and back to the re-loading pens; and the time so taken up, often an hour or more, very materially diminishes the period allotted them for rest; the minimum duration of which is fixed by the United States law at five hours, after a maximum period of confinement of twenty-eight hours.

More time than five hours is generally allowed them at Chicago, I am told, and more should be required by law. Not less than five hours of entire rest should be given them in the feeding-yards, undiminished by driving to and fro.

The plan of removing cattle from the cars at stated periods, on long routes, for food, water and rest, known in Europe as the American plan, although highly commended for its humane intention, finds little favor among European authorities on the subject.

In the report of the committee of the House of Commons "On Noxious Businesses," a blue-book ordered by the House of Commons to be printed July 8, 1873, Mr. W. McCombie, a member of the House of Commons for the county of Aberdeen, west district, who had been fifty years in the cattle-trade, and who had taken prizes in money, cups and gold and silver medals, amounting in value to over £2,000, speaks, with great positiveness, thus: "If you allow those cattle to be all untrucked to be watered, what would be the consequence? They must be all mixed together, some of them heifers, perhaps, just coming in season, and many of the bulls very dangerous to handle." "What sort of a mess would it be altogether if the cattle were to be taken out of the trucks, as is proposed, and put all into one mass to feed and water them, and then put them in again? The thing is perfectly impracticable." "I have no objection to their being watered and fed, if it can be done without taking them out of the trucks. I should very much wish to see it, but the thing is perfectly impracticable, to take cattle out of the trucks and re-truck them again." Of the time from Aberdeen to London, he

says, "They profess to carry them in thirty-six hours, but they are often forty and forty-two hours, and, I believe, forty-four hours in the transit." And without food and water!

M. Auguste Zundel, in his admirable prize essay on the transportation of animals by rail, says, p. 34, "We should not advocate the American system, where the animals are discharged every twelve hours for food and water,"—giving us credit for greater solicitude for the comfort of these animals than we can lay claim to.

But it is obvious that such convenient and complete arrangements for discharging cattle, car-load by car-load, into distinct yards, for keeping them distinct, sorting or mixing at will, as are provided at our great stock-yards, are entirely unknown to Mr. McCombie, else his strong and reiterated declarations of the impracticability of our daily practice would have been withheld or modified. They are much like the equally positive assertions one hears in England, that our universal system of signal-bell on the locomotive, with the bell-rope running through the train, accessible to all the passengers, "will never answer."

The objections of Mr. McCombie are strong and valid enough against turning all the cattle of a stock-train loose in a single inclosure, but vanish entirely before the well-organized system of the Union stock-yards of Chicago.

The only thing suggestive of cruelty, or of needless injury to the hides or flesh of the animals to be seen at Chicago, is the use of the formidable goad or spear, of which I have already spoken.* Whatever may be said of the wildness and ungovernableness of many of the animals received there, nothing is to be gained by inflicting deep,—and, in their numbered hours,—incurable wounds.

Buffalo Stock-Yards.—These yards are nearly new, having been removed from a position nearer the city a few years ago, and are in many respects admirable. The fences are closely boarded on both sides of the posts, and are surmounted by a firm, broad walk, carried over the numerous gates by a slightly elevated bridge, so that an excellent view of all the yards may be obtained by walking around on the fences.

* See page 104.

The feeding and storing-yards are quite various in form and dimensions; but many of them are about seventy feet by one hundred and forty, with sheds on one or both of the long sides. The open space between the sheds is paved with cobble-stones, sloping towards a gutter in the middle, and this gutter pitches each way to a cess-pool at each end, communicating with underground drains.

The space under the sheds is floored with sand and loam, sloping towards the paved area, and affords comfortable standing-room, and lying-down room too, for that matter, to all the animals the yard is expected to contain. Water-troughs and mangers are placed under the sheds, and fully supplied, the troughs with excellent water from artesian wells, slightly saline, and much relished by the cattle, the mangers with hay of good quality, not quite so profusely, perhaps, as at Chicago, but sufficiently.

The swine-sheds are excellent, and the sheep-folds truly admirable. Racks filled with hay, mangers for grain, and flowing water-troughs, clean, roomy, well-floored pens, with every convenience for sorting, driving, receiving, shipping, and a sagacious old bell-wether to pilot them in,—all seemed so complete as to leave nothing to be desired. Similar houses are to be erected for swine.

Some statistics concerning the business of these yards, are given in a foot-note to page 81.

On Wednesday, September 23, 1874, there were shipped from these yards two hundred car-loads of beef cattle, and fifty-eight car-loads of hogs, sheep and horses.

Albany Stock-Yards.—These yards, also, were moved a few years ago to their present site from a position nearer the city. They occupy ground considerably diversified in surface, and are in general well drained. The pens and lanes are paved with cobble-stones, and the feeding-yards are furnished with sheds. In many cases these yards are so narrow that the sheds occupy above two-thirds of their width, leaving little more than one-third open.

The mangers were supplied with hay, not so freely as at Chicago, or even at Buffalo, so that less was littered about the yard; but all appeared to get what they required, and were

to be seen lying down and ruminating after being in the yards two or three hours.

The water-troughs are too small, and are inconveniently placed in the corners of the yards, under the fence, so that each serves for two adjoining yards, and, although they look wide enough, each half is too narrow. In many cases they are inconveniently high; indeed, in some cases the earth in front of them, kept wet by leakage or overflow, had been trodden into mud knee-deep and worn away by the feet of the cattle, so that troughs originally too high were altogether out of the reach of ordinary cattle, unless nearly or quite full, as they were in no case found to be. The supply of water being limited, it is usually kept shut off, and only turned on after cattle are put into the yard. The pipes are small, the current slow, the troughs leaky in consequence of standing empty at times; and the consequence is that for a long while the depth is too little, being at the bottom of a deep and narrow trough, the top of which is three and a half or four feet above the ground on which the animals must stand to drink, for them even to touch it with their noses or tongues.

Having satiated themselves with the palatable water at Buffalo, they did not appear to be very thirsty here, and with the patience of their race, turned quietly away after a fruitless attempt to drink; but they must suffer for water before reaching Brighton. Indeed, some drovers are known to resort to the shallow trick of keeping their cattle from drinking at Albany in order that they may drink with the greater avidity at Brighton, and thus diminish their apparent loss of weight, or shrinkage; but this artifice is too transparent to be often successful, and cannot surely be a common practice. A more abundant supply of water is soon to be furnished, I was told, at the Albany yards; but the inconvenient height of the troughs, if not their ineligible location, should be remedied without delay.

The platform at these yards was in very bad condition. About half the planking was quite rotted and worn away, and the ground between the remaining planks was trodden into holes a foot or more in depth, the whole presenting the appearance of a corduroy road exceedingly out of repair. To add to the imminent danger of accidents in loading and dis-

charging, the bridges, originally too narrow for the enlarged car-doors now in use, were badly worn, split and broken, so as to be treacherous and dangerous. A great many cattle fell with their hind legs between the car and platform, in consequence of the bad condition of both platform and bridges, sometimes to their very serious injury, while I was watching the discharge of three trains, on the twenty-third day of September last.

Some facts respecting the business of these yards are printed in a foot-note to page 81.

Stock-Yards at Brighton.—These yards are very far short of the requirements of the business, and in several important respects inferior to many, if not to all the great stock-yards of the West.

A very noticeable defect is the small number of sheds, which our climate renders especially desirable, and which the enfeebled condition of the cattle, after their long journey, in many cases emphatically calls for.

It may be an illusion; but there seemed to me to be some evidence of a feeling prevalent, if unspoken, if even unconscious, that these animals had about reached the end alike of their journey and of their lives, and that any further care for their comfort and health would be superfluous and wasteful. Certainly such a sentiment must be repulsive to a humane mind, and cannot be by any means general among a class of men not deficient in humanity, and possessing a high degree of enterprise and business capacity, such as the men engaged in this trade are for the most part. But that the care which these animals receive diminishes as their fatigue and exhaustion increase, towards the end of the route, is too painfully evident.*

It must be borne in mind, too, that Brighton is by no means the last stage in the journey of a very considerable proportion of the animals received there. Large numbers are shipped by rail to Providence, Pawtucket, Fall River, New Bedford,

* Of the earlier stages, from Texas, Kansas, and Colorado, before reaching Chicago, I can only speak from hearsay, and if all that is said on the subject is true, there is room for very great improvement. Even the wise and humane law of the United States on the subject requires, it is said, vigilant inspection to insure obedience.

and the Cape; and to Lawrence, Lowell, Lynn, Salem, and Newburyport; and even to Portland, Manchester, and Concord, and other towns and cities in New England; and no inconsiderable number are driven on foot a weary distance, without food or rest, as if for the purpose of draining the last drop of vitality out of their exhausted frames.

The railways doing this business of re-distribution are in general poorly provided with cars, yards, platforms, and facilities of all kinds to transact it properly. Common box-cars have too often to serve for cattle-cars, causing extreme suffering from heat in summer, and from deficient ventilation at all seasons.

Cattle are often compelled to wait, standing for hours, for trains to be made up, and are subjected to distressing shocks in the process, by frequent stopping and starting.

The routes are short, it is true, if the time is not; and the degree of hardship and suffering they give rise to might be quite supportable by animals in high health and good condition; but coming at the close of a long, exhausting, and harassing journey, every stage of which, endurable by itself, serves to aggregate and intensify all the ill-effects of the previous stages, these short routes of distribution around Boston are not without importance to the general question of transportation as affecting the health of the animals, and the healthfulness of the food they furnish to this community.

Union Stock Yards, Watertown.—There could be found no more striking illustration of the improvement I have already mentioned introduced in the construction of new stock yards, than is to be found at our own doors in the yards erected two or three years ago by the Fitchburg Railroad Company at Watertown, and used by them conjointly with the Boston & Lowell Railroad Company, which two companies together have brought to our market annually, for the last three years, a mean number of 42,229 head of cattle, or nearly 26 per cent. of the mean annual aggregate, and 21,760 sheep and lambs, or 5.5 per cent. of the mean annual number, for those years. These yards are located on ground very nearly level, and extend about 1,600 feet along the line of road, which is there straight,—the receiving-pens extending to a

still greater distance. The platform, about level with the floor of a car, is sustained by a substantial wall, coped with split granite, and formed of gravel. The yards are equal in length to ordinary stock-cars, about thirty feet, and are about square, thus affording ample space for animals released from cars about eight feet wide. Gates nearly equal in length to the width of the platform, give easy access to these yards directly opposite the car doors, and when open, shut off the portion of the platform abreast of them from other portions. A wide street, parallel to the railway, skirts these yards, and on the opposite side gives frontage to three large buildings, each about eighty feet wide where abutting on the street, and about 220 feet deep; one being used for a stable for cows and other cattle, and the other two for sheep-folds.

Two streets, at right angles with this main street, separate these three buildings, two others skirt them on their outer sides, and eight others, four on each side of these central buildings, extend back the same distance to a street in the rear, and give access to storing and feeding-yards, four on either side of each street save the outer ones, which at present have yards only on one side.

These yards are about fifty-five feet square, and have rows of sheds along the line common to each two tiers of yards, parallel to the cross streets and midway between them. The feeding mangers and watering-troughs are excellent, drainage is provided, and no desirable feature seems to be omitted. There is a large and commodious hay-barn, a convenient scale-house, with Fairbanks' scales; and at suitable distance there is a good-sized hotel, said to be well kept, and doubtless a busy, stirring scene on market-days. The arrangement of the cow-pens and stalls, the provision for sheep and calves, are all as good, apparently, as can be made. Cattle arrive, generally, only once a week, in any quantity, and are seldom kept even a few hours; but sheep and cows are sometimes kept here two weeks or more, and if properly cared for, as it is said they are, must be perfectly comfortable.

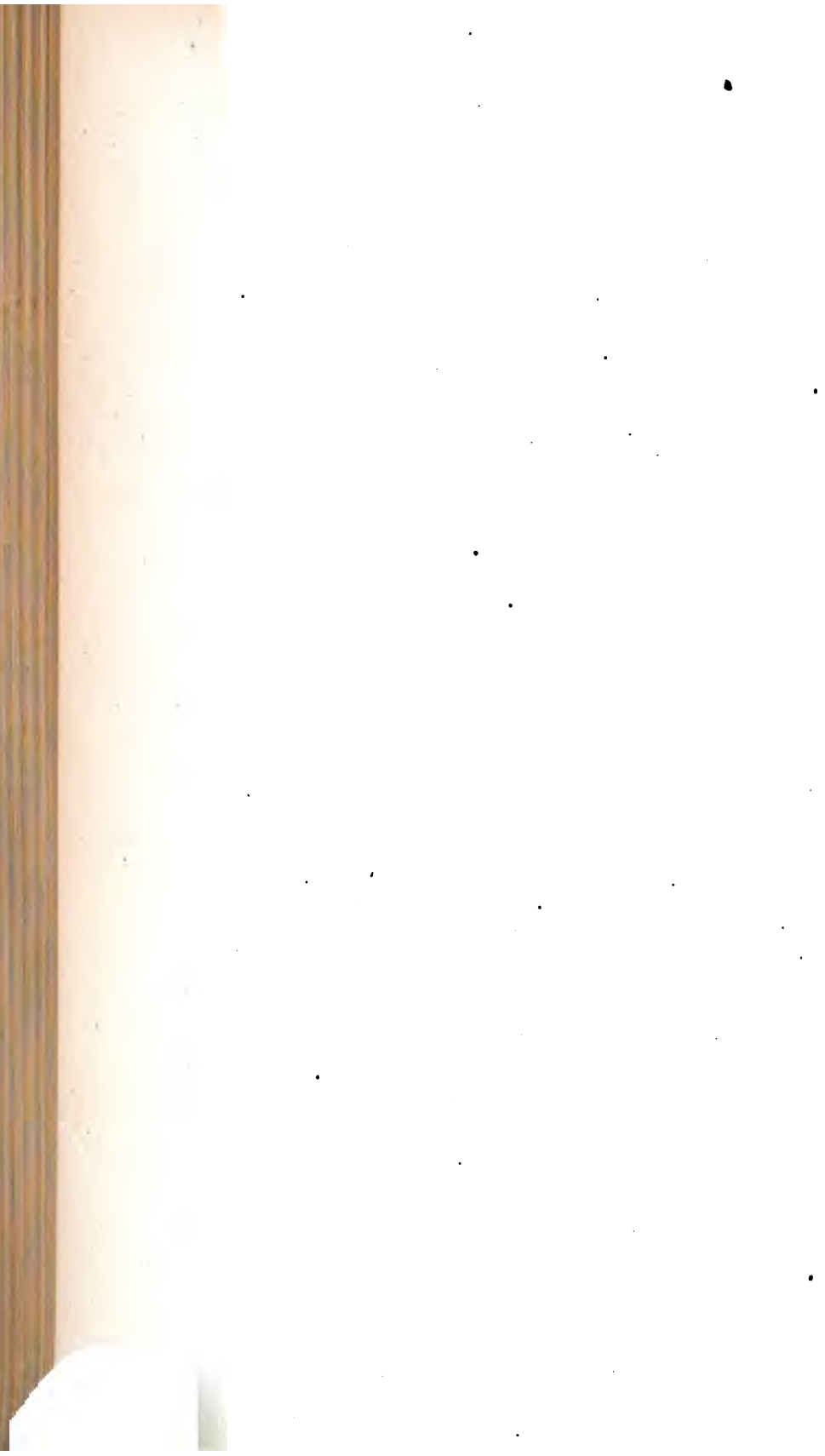
A direct comparison of these admirable yards with the yards at Brighton, already described,—which can be made in two hours, as they are but a short distance apart,—will bring into one-view all the progress in this direction which has been gained in thirty years.



OUR MEAT SUPPLY, AND PUBLIC HEALTH.

BY CHAS. F. FOLSOM, M. D.

(SECRETARY OF THE BOARD.)



OUR MEAT SUPPLY, AND PUBLIC HEALTH.

In the earliest records of civilization, there is evidence of legislation with regard to the different kinds of food suitable to be eaten by man. These were prescribed minutely, in part, probably, as sanitary regulations, in the laws of Moses, and also in those of Egypt. Hippocrates, the founder of medicine, who flourished at the time of the highest glory of Greece, gave very minute directions with regard to diet, both for health and for disease; and in later times the subject receives more attention in proportion as science advances and communities become more intelligent. In fact, with our present knowledge of food, although we are as yet only on the threshold of inquiry, we can often prescribe it with as much precision as we can use digitalis and opium.

Although physiologists are not agreed that *animal* food is absolutely essential to a high degree of civilization, there are certainly many facts which seem to indicate that it is resolvable into a greater amount of force than the other nitrogenous foods.

It is true that many tribes of North American Indians have attained a very high physical development upon a vegetable diet; that many healthy Scotch farmers live chiefly on oatmeal; that the laboring classes in Europe rarely eat meat; that a large proportion of the inhabitants of Great Britain formerly lived on bread, cheese and beer; that the former slaves in our Southern States received meat only exceptionally; that the Roman legionary soldier carried a weight of sixty pounds, and performed feats of strength and endurance that have astonished the world, without eating flesh; and that a few modern vegetarians have substituted milk and eggs (which, however, contain the elements of animal food) for butcher's meat in their diet, without suffering from it;

while the Brahmins of India eat nothing which breathes or contains the germ of animal life, although they can hardly be said to have attained a vigorous physical or mental culture. Nevertheless, as a rule, when hard-working people have not eaten meat, it has been because they could not get it.

As far back as the time of Homer, the poorer classes in Greece ate blood-sausages, because they could not afford meat; and at Rome, in the time of the empire, it had even become necessary to issue pork in addition to corn to the destitute,—the forests of Lucania furnishing thousands of pigs yearly to the imperial city, while the neighboring plains were dotted with sheep and cattle for the wealthy classes. In recent years it has been found in India that the Hindoo workmen on the railroads could not work steadily till they had meat added to their diet,—their usual food, consisting almost exclusively of rice, having proved insufficient. Dr. Kane, in his "Arctic Explorations," has expressed his belief that the timely arrival of fresh meat had saved the lives of some of his men; and Dr. Livingstone says that in South Africa both the members of his expedition and the natives would "eat anything to get animal food." Liebig ascribes the greater endurance and efficiency of American workmen, as compared with those of Europe, to their meat diet; while Dr. Ray attributes some of the transient illnesses in New England to a too free use of meat.*

In the last edition of his "Principles of Human Physiology," Carpenter says:—

"Whilst, on the one hand, it may freely be conceded to the advocates of vegetarianism that a well-selected vegetable diet is capable of producing (in the greater number of individuals) the highest *physical* development of which they are capable, it may, on the other hand, be affirmed with equal certainty that the substitution of a moderate proportion of animal flesh is in no way injurious; whilst, so far as our evidence at present extends, this seems rather to favor the highest *mental* development."

The experiments of Haughton and others have certainly proved that more food is necessary for hard intellectual labor

* Mental Hygiene, p. 82. The question has been suggested whether some of our superfluous energy or nervousness might not be explained in this way. The average daily consumption of meat in London is about four ounces to each individual; in the places supplied by the Boston markets it is estimated to be not far from twelve ounces.

than for a corresponding amount of physical exertion; and M. Metz testifies to the value of a liberal diet in making his boys in the reformatory school at Mettray more manly.

But whatever physiological theories may prove correct, it is certain that meat contains nitrogenous, fatty and inorganic elements of food in a palatable and easily assimilable form; and the nearly universal experience of mankind has shown that its place cannot be fully supplied by any substitute. It becomes, therefore, a matter of vital importance to every state, that its meat markets should be under the most careful supervision.

Since the time of Moses, the Jews have carefully inspected all meat sold in their markets; although their rules, based, probably, on the best sanitary knowledge of some thirty centuries ago, are not sufficient to keep diseased meat from their tables, and their method of slaughtering is unnecessarily cruel. And now most of the large cities in Europe, as well as some in America, have followed the leadership of Paris in having rigid examinations, both before and after slaughter, of all animals intended for human food.

A wider attention to matters of this nature, and a deeper interest in them, leading to vigorous action, would be justified by their intimate connection with human welfare. In fact food, through its effect on the health, and through the necessary operation of physical laws, determines, in no small degree, individual and national character, and consequently shapes, to some extent, national policy. But, not pausing to dwell on these considerations, the present article will be devoted to a consideration of the conditions under which the quality of meat is injured for human food, and, of course, deals with only a very small branch of the general subject. The various changes in the tissues of animals, both before and after slaughter, will be considered with reference to their influence upon the health of consumers, beginning with the commonest form,—putrescent meat.

PUTRID MEAT.

The testimony is very conflicting with regard to the precise amount of injury arising from the consumption of meat which has become more or less decomposed.

On the one hand, it must be acknowledged that enormous quantities of putrid meat are daily eaten without very immediate or striking ill-results. On the other hand, slight illness, and even dangerous symptoms, have been so often reported as to leave no doubt that the inspectors of nearly the whole civilized world are at least partly right in condemning putrid meat when offered in the markets as human food.

The inhabitants of the Faroe Islands habitually eat their meat in a high state of putrefaction, and enjoy from its fermented condition a sense of stimulation similar to that which the Sandwich Islander gets from his fermented potato; and the plantation negroes of the United States, for want of animal food, have not infrequently been known to eat condemned and even rotten bacon, and, in most cases, without evident injury. In some parts of Russia, and in the polar regions, rancid blubber and offal and meat constitute at times the chief articles of diet; and in modern cities decaying meat is sold and eaten by tons without any marked evil results being noticed, while the "high" condition of game necessary to suit the tastes of many epicures is well known. Dr. T. K. Chambers of London states that "tons and tons of decayed and purulent meat, which, if seen by the inspector would properly be condemned as unfitted to the dignity of the human table, are yet surreptitiously made into sausages in London, and hitherto no case of sickness has been traced to this cause."* Decroix states that putrid meat was eaten to a great extent during the siege of Paris, without producing any serious results; but it must be remembered that illness, unless very severe, would have passed unnoticed at such a time; that disease and death were making frightful ravages in the city; and that, just as during the siege of Rome by Alaric, it is impossible to say to precisely what extent unwholesome food contributed to the sum-total of disease. During the siege of Mantua, a diet of putrescent meat was considered by Foderé to have caused gangrene and scurvy. The epicure who eats putrid meat is especially liable to attacks of gout; the game suiting his palate often gives rise

* But the lower classes in London live under circumstances most of which are positively known to be prejudicial to health; and we must have a more delicate balance if we would weigh all evidence exactly.

to diarrhœa in those not accustomed to its use ; and the races that feed habitually on decomposed meat are weak and of slight power to resist disease.

The instances where putrid meat has given rise to serious symptoms in those eating it are numerous, and to be found in all books on legal medicine. Six hundred people who ate ham and veal in a state of incipient decay at Zürich all became ill, and several of them died. Ollivier reports a case where six people ate some putrid mutton and became violently ill, while four died. Christison mentions the facts of fourteen persons having become very ill with diarrhœa and vomiting from eating veal so slightly decomposed that its appearance was perfectly good, and of five individuals having suffered from marked illness by eating broth made of decayed meat. During the cholera epidemic in London, in 1848 and 1849, it was clearly proved that those persons who ate putrid meat suffered especially. Professor Gamgee states that illness and death have been attributed on good authority to eating mutton in a state of incipient decay.* In one of the large American hospitals, five years ago, there were several epidemics of fever, prostration, diarrhœa and vomiting which were traced directly to beef-tea made from somewhat decomposed meat. Only those already quite ill were made very sick, while a person in robust health could take the same food without striking ill-effects. The beef-tea was not in all cases of disagreeable taste or odor.

If it were possible to make as accurate experiments with regard to decayed meat as we can with air and water, we should undoubtedly find that, when eaten, it produces, in the vast majority of cases, a depression of the general health, if not actual sickness. In a mild degree, the symptoms are lassitude, slight headache, dulness, indigestion and loss of appetite. As instances of severer form, Professor Parkes states that "diarrhœa and vomiting, followed by typhoidal symptoms, are not uncommon after eating butchers' meat, so that poisoning is suspected, but no evidence of it found," and that "such instances become more numerous as attention

* In this case, the sheep furnishing the meat was found to have had the "rot" or "liver-fluke."

is more directed to the subject." In Paris, not infrequently, the police are called to investigate cases of suspected poisoning, when the only ascertained cause of trouble has been the eating of decayed meat.

In a recent report of the Committee of the Metropolitan Association of Medical Officers of Health of London, is the following statement :—"Although it may be difficult to prove it by actual cases, there can be no doubt that unwholesome meat is one cause among many of the debility and cachexies, the poverty of blood and intractable maladies of the poor who flock to the dispensaries and parochial medical officers, and especially of diarrhoea during hot weather." Dr. Letheby says :—"I have often had to investigate cases of mysterious disease which had undoubtedly been caused by unsound meat." Dr. Pavy's opinion is that "experience shows that the resisting power enjoyed by those accustomed to our mode of living is not sufficient to allow meat tainted with decomposition to be consumed without incurring a risk of more or less severe gastro-intestinal derangement, if nothing more, being set up."

Perhaps, as Liebig suggests, a bit of old cheese, or a small piece of fermented meat may communicate the fermentative process to the rest of the food in the stomach in such a way as to assist digestion ; but we know that a large quantity of putrefied matter induces similar changes in organic matter exposed to it ; * and the result, if in the stomach, must be decomposition, liberation of gases and indigestion. "Sometimes some of the putrid substances are absorbed, as there are signs of evident poisoning of the blood, a febrile condition, torpor and heaviness, fetor of the breath, and sometimes possibly even jaundice." †

Typhoid fever enters our systems in the air we breathe and in the water we drink ; and the question has been very

* An intelligent butcher in Washington, D. C., informs me that if he leaves a small piece of putrid meat even in his ice-house over night, the other meat exposed to it becomes mouldy ; and Mr. Hammond, President of the Refrigerator Car Company, which sends daily to Boston alone twenty tons of fresh beef in excellent condition, writes :—"My experience is that putrid meat in a close room or a common ice-box would set up decomposition with the balance of meats in the close chamber, if kept confined any length of time."

† Parkes.

plausibly asked, whether eating putrid meat may not be responsible for a certain number of cases.*

In metropolitan hospitals, especially where there is not infrequently tainted meat used (disguised in cooking or not), it is a very noticeable fact that there are days when a large number of patients are not as well as usual, and that, too, without any evident cause; while the great frequency of headache, languor, want of appetite, etc., in ordinary life, which remain unexplained even after giving the frying-pan and the air-tight stove their full share of credit, should make us careful in deciding that putrescent meat may be eaten with entire impunity, even when that is apparently the case.

The antiseptic effect of good cooking, and the great power of the system to select and assimilate what it requires, and to reject what is superfluous or injurious, probably in most cases protect active, vigorous persons from the harmful effects of eating unwholesome meat. But for the weak and the sick, and for all who live under the complicated circumstances of a highly civilized life, demanding of their brains and muscles all the work that can be got out of them, it is manifestly of the greatest importance to have all the conditions of living as perfect as possible, and to admit no source of even possible injury into their systems. Nor should we be deceived by the seeming tolerance of evil influences which our organs manifest by long habit.

If decaying meat is seen before being cooked, its "slippery" appearance, its softness to the touch, and its somewhat pale hue, render its detection easy, while the odor is unfailing in later stages.

If meat is salted, a slight amount of putrefaction is thereby arrested, but not if softening, or discoloration, or odor are markedly present; and in such cases decomposition would probably often pass undetected.

The sausage, however, is the grand receptacle of vile meat of all kinds, where it is spiced into obscurity; but in the majority of cases, even here, thorough cooking may be relied upon to prevent any evident disagreeable results. Still,

* Compare also Dr. Griffith, Medical Officer of Health, in his last report for the borough of Sheffield, England:—"Foul air, polluted water, and unsound liquid or solid food, are the chief sources of fever" (typhus and typhoid).

Bologna sausages are eaten raw; and in the vicinity of Boston fetid and purulent meat is sometimes used in their manufacture; while veal is dressed which the owners would not dare to offer for sale in any market, and is carried to some of the five manufactories in our suburban towns, where also are received the carcasses of animals in which killing has been nearly, if not quite, a work of supererogation.

In this connection it may be proper to allude to the poison, of not entirely certain chemical composition, which is found in sausages, ham and bacon, at a certain stage of decomposition. It may not have caused the fatal results in this country that have been observed from it in Europe, but it would not be surprising if such cases should pass undetected with us, where there is no careful system of medical police. In Würtemberg alone, four hundred people have been made dangerously sick, and one hundred and forty have died, from the effects of this poison during the past half century. It may be that the poisonous properties of brine which has been used over and over again are due to similar chemical changes.

PARASITES.

It is not yet certainly known how many parasites are to be found under various circumstances in man; and of those with which we are tolerably familiar we cannot in every case say precisely how they gain entrance to our systems. Of the ten or more *tæniæ*, or tape-worms, found in the human body, only one is quite common in America, a second is somewhat rare, while the rest belong rather to the curiosities of medical experience.

I. The *tænia solium*, or solitary tape-worm, so called because usually found singly, although two, three, or four, or even ten may co-exist in the same individual, is fully developed only in the intestinal canal of man.

It is chiefly to the researches of Küchenmeister and Siebold that we are indebted for our knowledge of its natural history.

The worm is from five to forty feet long, about one-third of an inch wide at its widest part, with a slender ribbon-like neck. It has a globular head, which presents four circular discs or "suckers" at the sides, and at the top a double row of concentric hooklets, by which the parasite attaches itself to

the mucuous membrane of the intestine of man. The body consists of numerous rectangular articulations or proglottids, which are developed from the neck by a sort of budding process, thereby pushing down the remainder of the body and increasing the length of the parasite. It will thus be seen that the head, with a small part of the neck, is sufficient to keep up life and procreative power; even if the rest be destroyed. Each one of these articulations contains all the organs necessary for reproduction, and may discharge nearly fifty thousand *ova*, or eggs. The *ova* and the proglottids containing them are discharged almost daily with the excreta of infected men.

The *tæniæ* are probably long-lived. Flint thinks that under favorable circumstances they may live a dozen years or more.

The symptoms of their presence are obscure, being chiefly those of irritation and insufficient nutrition, or reflex and involving the nervous system; and the tape-worm lives on those elements of food which are most easily assimilated. The disease is an unpleasant one, but is not in itself dangerous, except as it may be a source of infection for the *cysticercus* or larval form of the worm; and the cure in uncomplicated cases is generally not difficult if properly conducted.

The *tænia solium* is not as common in this country as in Ireland and North Germany. Still, it is probably much more common than is generally supposed, as Dr. Hand's investigations have shown in regard to Minnesota.

As far as at present known, the only source of infection for man is the flesh of swine containing the *cysticercus cellulosæ*, which is the larval form of the *tænia solium*. Future investigations, however, may prove that the *cysticercus* found in deer, apes, bears, dogs, rats and wild boars, is one and the same with that of pigs.

According to Pappenheim, the *ova* of the *tæniæ* are not susceptible of development into *cysticerci* unless they be for a time exposed to the air, so that the *ova* existing at any time in the intestinal canal of any individual man must be first discharged with the excreta and then re-ingested through the medium of contaminated drinking-water, etc., before they can assume the larval form. Heller, on the contrary, states that they may be forced from the intestine to the stomach in

vomiting, pass back again from the stomach to the intestinal canal, and thus meet conditions favorable to development into cysticercci, so that both forms of the parasite may exist in the same individual, and the ova discharged from one man may prove a source of infection for another.*

When cysticercci cellulosaë are found in man, their migration from the intestinal canal to the various parts of the body probably takes place in two ways. They either pierce their way directly through the soft parts, following, perhaps, the course of the lymphatics, or they get into the circulation, possibly through the medium of the portal vein, and are carried along in the current of the blood. During this stage there is some illness and pain. Dangerous or fatal symptoms appear when the parasites are lodged in some sensitive or vital part, as the eye, heart, spinal-cord, or brain. As many as three thousand have been found in one individual, and Griesinger states that in the brain they occasionally give rise to insanity.

The infection with the cysticerccus cellulosaë (the form of the parasite found in swine), in the case of man, is a disease of middle age, and commonly of the lower or uncleanly classes of Europe. In this country, it is either extremely rare or it has passed undetected.

The cysticerccus forms for itself a cyst or bladder, filled with clear, serous fluid, from one-eighth to one-half an inch long, according to its age, the whole process of development requiring two or three months. This cyst becomes surrounded with a capsule of cellular tissue, except in the brain, where it is often wanting. In this form, if undisturbed, the parasite lives from three to six years, dies, undergoes fatty degeneration, and the soft parts are absorbed, leaving a hard, chalky concretion in which the characteristic hooklets of the larva can be found with the microscope (Stich). This is the most favorable result to be expected, as no therapeutic measures are of any avail unless the cysts are superficial enough to be removed with the surgeon's knife.

The segments of the tapeworm discharged with human excreta are greedily eaten by hogs, and in a few days a certain proportion of the ova (according to Leuckart, about one in 1,340) become developed into cysticercci cellulosaë. Dr.

* Ziemssen's Handbuch, 1874.

pigs less than a year old, and that it is an error to suppose that the foetus can be infected. While the parasites are migrating from the intestinal canal to the voluntary muscles, chiefly of the fore part of the body, pain and symptoms of inflammation are present in the pigs. They are found so nearly universally under the eyelids and tongue, that the French and German inspectors at sea-ports and depots of transportation, examine all hogs in these two places, as a crucial test for the presence of the cysticercus. The test, however, is not necessarily infallible. The cyst of the larva lies usually in the connective tissue, between the muscular fibres, is oval, translucent, and as large as a pea or bean. Its duration of life, as in man, is from three to six years.

These small "bladders," scattered through the muscles, give rise to an appearance which gives to the meat the popular name of "measly" pork, which was first mentioned by Aristophanes, and was known to Aristotle.

The symptoms, if the disease is severe, are those of fever and gastro-intestinal pain and inflammation, while the animal is alive. The shoulders become broad, the loins narrow; there is always inflammation of the inner surfaces of the eyelids, and often hoarseness, difficulty of breathing and lameness. In "measly" meat, the small cysts, partially filled with fluid, are readily recognized with the naked eye, unless their number be quite small, or they be shrivelled by drying. When taken into the human stomach, they are digested, setting free the larvæ, which, in a certain proportion of cases, if still alive, become tapeworms in about two days.

The destruction of the parasite cannot be accomplished by rupturing the sac, and allowing the fluid to escape; but it is killed by *thorough cooking*, at a temperature of 192° F. (Flint), and by *salting*, dry or in brine, in such a way that each cysticercus be thoroughly exposed to the action of the salt. It must be borne in mind, however, that thin-walled cysticerci, on the surface, may be destroyed, while tougher ones, imbedded among the powerful muscles, and at the centre of a piece of pork, retain their vitality, and that lard may contain them in a living state even after having been

melted.* In fresh meat the parasite has been known to retain life for two or three weeks, but it may very possibly live much longer. The English soldiers, in the Crimea, are said to have been infected from meat which had been imperfectly salted in Ireland and transported to the seat of war.

II. The *tænia mediocanellata*, the tape-worm of the ancients, is also found only in man. It resembles the *tænia solium* so much in appearance, that it was mistaken for that parasite until Küchenmeister, in 1852, showed that it has larger sucking discs, is fatter in appearance, and has more branches of the uterine organs, beside having no "hooklets" on the head. Its larvæ form, the *cysticercus tæniæ mediocanellatæ*, is found only in beef and veal, it having never yet been observed in man. The ova discharged with human excreta are accidentally snatched up, in small numbers, by cattle, with a mouthful of grass, or are ingested with contaminated water, instead of being devoured in great numbers, as in the case of hogs. For this reason, it is very rare for many cysticerci to be found in neat-cattle.

The cysts contain larvæ which are about one-fourteenth of an inch in length, resemble the "measles" in pork in appearance, natural history, development, symptoms, etc., and, so far as is now known, meet the requisite conditions for attaining maturity only in young cattle.

It is not positively known how long these parasites may live; but in one case they were found by Cobbold to be dead eleven months after the time of infection, which renders probable the statement of Dr. Thudicum, that they are not likely to be found alive in beef from cattle over three or four years old. They seldom exist in such numbers as to give rise to marked symptoms during life.

In beef they are detected with great difficulty, from their small size and small number. They are effectually destroyed by the same measures as are used in the case of "pork measles."

The *tænia mediocanellata* is very common among the Abyssinians, who eat great quantities of raw beef. It is the common tape-worm of Middle and Southern Europe, and has lately been found so frequently in England as to be called the

* In Paris all infected lard is rendered unpalatable by pouring oil of turpentine upon it at the time of inspection.

tape-worm of the upper classes. It is more or less prevalent in most parts of the world. Before Dr. Leidy reported a case of the disease from eating raw-beef sausages, in Philadelphia, and possibly since then, many cases in America must have been mistaken for the tape-worm derived from swine. Leuckart, Weisse, Trousseau and others, have reported cases of the disease from giving raw beef to young children suffering from exhaustive diarrhoea.

As with the *tænia solium*, the cure is not usually difficult.

Whether the *cysticercus ovis*, found twice in mutton by Cobbold, belongs to still another variety or not,—whether it is only accidentally developed in sheep, and whether man may be infected from it,—are questions not yet decided.

III. The *bothriocephalus latus*, formerly called *tænia lata*, concerns us at present, only as it is occasionally imported with immigrants. It prevails chiefly in the extreme north of Europe, to a certain extent also along the banks of some of the rivers of the Old World, but not in the United States. It is about an inch wide at its widest part, has no bulbous head or sucking discs, and differs somewhat from the *tænia* proper in its reproductive organs, although it is bi-sexual. Its larval form may, in the future, be proved to be transported to man through the medium of cattle; but there are some reasons for supposing that it exists in fishes, especially in salmon of particular localities, although nothing positive is known of it.

IV. The *cysticercus tenuicollis*, the most common parasite of ruminants, is found in the abdominal cavities of a very large proportion of the sheep slaughtered in the United States. Of a large number of sheep examined by Dr. Thudicum, in London, ten years ago, nearly every one had more or less of the characteristic "water-bladders." It is found occasionally in other ruminants, squirrels, monkeys and pigs; but there are no authentic reports of its ever having been found in man. It is developed fully in the abdominal cavities only; but the lungs of sheep are often studded with those which have died there, not having met the conditions adapted to sustaining life.

In the early stages of this disease, it would be difficult to prove that mutton is in any way injured as food by it; but, in the later stages, which are accompanied by cough and

wasting and poverty of blood, the flesh of the animal certainly loses in nutritive value, although it has not been actually proved to be injurious as food.

Sheep become infected by accidentally ingesting with their food or drink the ova of the *tænia marginata*, a tape-worm not uncommon in dogs.

V. Only a few instances of *cysticercus acanthotrias* have been reported in man; nor is it known from the ova of what tape-worm he must defend himself to escape the parasite. It may or may not be derived from animals that are eaten.

VI. The *cysticercus tæniæ echinococci* is the most dangerous of the parasitic diseases of man. According to Cobbold, it is found also in the monkey, ox, cow, sheep, horse, ass, goat, camel, deer, chamois, pig, zebra, kangaroo, giraffe, squirrel, and in several of the feline animals. Siebold states that turkeys suffer from them also.

The disease in man prevails somewhat in most countries, but is rare in America, owing to the comparatively slight extent to which dogs are used here in the care of sheep. In Iceland, where there are six dogs and eleven horned cattle to every peasant, all living in rather intimate relations with one another, it causes one-seventh of all the deaths. Hjaltelin, of Reykjavik, places the mortality from this cause even at one-fifth of the total.

To complete its cycle of life, it infects three animals in succession. The corresponding tape-worm is found only in the intestines of dogs and wolves; in Iceland, in nearly every dog. Dogs eat the offal (liver, lungs, spleen, etc., etc.) of sheep infected with the larval form of the disease; the sac is digested in their stomachs, setting free the embryos, to be developed in their intestinal canals into tæniæ; and the ova of these tape-worms, discharged with the excreta of the dogs, find their way, presumably through the medium of contaminated water, edible plants, etc., into the intestinal canal of man, to be developed in turn into the larval form, consisting of a series of cysts, one within another, sometimes found singly, sometimes by thousands, and constituting the so-called hydatids of the liver, lungs, brain, etc. Davaine quotes cases of their having been found in the spinal cord, eye and bones.

They multiply by endogenesis, and the parent cyst sometimes attains the size of a man's head (Trousseau).

They have been described more or less understandingly from the time of Hippocrates. According to Dr. Beale, the *cysticercus* itself and singly is one two-hundredth, and the corresponding tape-worm one-fourth of an inch long.

The symptoms in man are, as a rule, in direct proportion to the vitality of the organ invaded. The cysts sometimes undergo spontaneous absorption, or may be occasionally removed with the surgeon's knife.

The flesh of sheep, suffering from this disease, deteriorates in value; but the facts at present known do not admit of our saying whether it is actually injurious or not.

VII. The *cœnurus cerebralis* is another of the "bladder-worms," and is commonly found in the brains of sheep; rarely, also, in the livers of rabbits. It produces in sheep a disease popularly called "gid," which is attended with marked cerebral symptoms, and is not infrequently fatal. Where the disease is so slight as to be discovered by accident, the flesh of the animal could hardly suffer. Where sheep are killed to avoid their dying of the disease, the mutton must be at least poorer in quality; perhaps not absolutely injurious in all cases. The corresponding tape-worm is found only in the intestines of dogs.

VIII. The *cysticercus pisiformis*, found in hares and rabbits, is the larval form of a parasite, which is found fully and sexually developed in dogs, cats and foxes. The flesh of the infected animals becomes pale and anæmic in course of time, and is rendered less nutritious as food. The parasite does not infect man.

IX. The *distoma hepaticum*, or liver-fluke, sometimes called "flounder," from its resemblance in shape to the fish of that name, belongs to a different order from the parasites already mentioned. It is about one inch long, one-half an inch broad, is the pest of animals grazing on wet lands, and produces the disease commonly called "rot," which destroys so many sheep in all parts of the world; in England alone sometimes a million in one year. The distomata introduced with the food or drink of sheep, creep to the narrowest part of the gall-duct, where they remain, setting up inflammation

and catarrh, and causing more or less local inflammation of the liver, obstruction of the vessels, re-absorption of bile, and, finally, anæmia, jaundice, dropsy, etc.

The flesh of such animals loses decidedly in nutritive value, and many assertions have been made that it is positively injurious as food. The latter fact has not yet been proved to be true, although it would be hard to conceive of it as otherwise; and such meat is known to putrefy early. The livers themselves cannot fail to prove bad food.

Like the *tæniæ*, the distomata are hermaphrodite. The ova discharged with the excreta of sheep are probably capable of development only in stagnant water. After bursting the egg-shell, the embryo swims about with its cilia. Probably it then passes into small molluscs, which are accidentally taken up by sheep (or perhaps also occasionally by man) with their food; but the larval form has not yet been distinctly recognized. The distomata occur very exceptionally in the livers of men, and the source of infection is not yet positively known.

X. The *distoma lanceolatum*, about one-eighth as large as the last-described worm, has a similar natural history, and produces similar, but less marked, symptoms. It is also much more rare. Its locality is in the gall-ducts of sheep and horned cattle, and has been observed three times in man.

XI. The *strongylus filaria* belongs to the same order as the *trichina spiralis*. It exists in great numbers in the lungs of sheep in Europe, where it gives rise to local inflammations, cough and emaciation. The female worms are from one to three inches long, the males about one-third as large. The ova and embryos are coughed up by infected sheep, and are readily swallowed with their food by others, finding their way into the air-passages, probably during the process of rumination.

It is not yet certainly known whether the ova must be exposed to any conditions found only in the external atmosphere in order to be developed into full-grown worms, or whether the necessary conditions all exist in the lungs of the sheep. Several observers have described this disease as found in America; and it was probably imported from Europe, as it is not common enough here to lead us to suppose that it

is indigenous. As the parasite is not infectious to man, the subject interests us here only as the meat of infected animals is of inferior value as food, and may possibly be injurious.

XII. The *trichina spiralis*, is, next to the echinococcus, the most dangerous parasite infecting man. It is found also in pigs, foxes, guinea-pigs, rats, cats, mice, marmots, polecats, martens, badgers, hedge-hogs, raccoons, moles and dogs, but only as the greatest rarities. Pigs are supposed to become infected chiefly from eating rats, the offal of other pigs, and the excreta of men containing young trichinæ.

It is doubtful whether a single case ever occurred where man became infected otherwise than by eating *raw or under-done* pork, and the most common sources of infection are sausages, ham and bacon.

If the trichinæ existing in pork are very young, they are simply digested when reaching the human stomach, without being developed, and cause simple diarrhœa.

At a suitable age the cyst containing the trichina is alone digested, setting the embryo free. Arrived in the intestine, they become sexually mature, their thread-like appearance rendering them quite recognizable with the naked eye. Countless eggs are discharged by the female, and in about a week's time the newly-hatched worms are making their way to the muscles, either by piercing the soft tissues, or by being carried along in the current of the blood in the vessels, or possibly in both ways, and reaching their full size as larvæ in about two weeks. The male and the female larvæ are both about one-thirtieth of an inch long and one seven-hundredth broad. In some cases severe gastro-intestinal inflammation is set up, and the trichinæ are violently expelled by diarrhœa without getting into the muscles at all. If it were possible to diagnose the disease with certainty in this stage, nature suggests the appropriate treatment. During the migration of the young trichinæ from the intestinal canal, which occupies for each worm about four days, so that even the most distant muscles may all be invaded in that time, there is great soreness of the body, with considerable swelling of the face and limbs. The pain, fever and constitutional disturbance of this stage may cause death, as may peritonitis, or inflammation of the respiratory muscles or of the heart.

After piercing the fibrous sheath of the muscular fibrils, the embryonic trichinæ become encysted within capsules (one in each) of connective tissue, in which they have some freedom of motion. These capsules, which are from one-fiftieth to one-hundredth of an inch long, are, of course, confined to one spot; and, in process of time, they become calcified,—in man in about two years. At this stage of the disease there is usually some, and not infrequently complete, loss of power in some of the affected muscles, and not a few patients die of exhaustion, while a certain number of them completely recover,—at least as far as symptoms are concerned. The mature worms—the females being one-eighth and the males one-eighteenth of an inch long—do not reach the soft tissues of the body. They live from five to eight weeks, and are discharged from time to time with the excreta, either before or after their death.

Trichinæ, as well as cysticerci, were first discovered in men in the dissecting-room; and they were repeatedly observed, without their import being ascertained, until 1860, when Zenker, of Dresden, explained their origin and relation to certain symptoms, and described the disease trichinosis. Previous to his time, the trichina had been identified only once in pork; although, as occurring in man, it had been well known for a quarter of a century. Dr. Thudicum has estimated that in one case twenty-eight million trichinæ existed in one man.

It is not known how long they may live in the encysted form in human muscles. Langenbeck, of Berlin, has reported a case, where, in removing a tumor of the neck, eighteen years after an attack of trichinosis (which passed for poisoning at the time), he found living trichinæ in the muscles; and they have been known to retain life for still longer periods.

- Before Zenker's discovery, very many cases passed for poisoning, typhoid fever and other diseases.* One epidemic, involving over three hundred persons, in Blankenburg, was

* Dr. Germer, health officer of Erie, Pa., to whom I am indebted for many facts in regard to this disease, states that a Hungarian physician told him, eighteen years ago, in Vienna, that eating a certain kind of pork often produced a peculiar form of rheumatism in Hungary.

treated as gastro-rheumatic fever; and it was several years later that the true character of the disease was ascertained with the microscope, by examination of the pectoral muscles of one of the men affected.

Severe epidemics have occurred in New York, Mississippi and Iowa, and isolated cases are constantly appearing in different parts of the United States,—some in Massachusetts having been referred to in previous reports of this Board. About eighty individuals are now suffering from trichinosis in Berlin, nearly as many near Hanover, and a large number in the State of Indiana. At Buffalo, last spring, there was quite a severe epidemic in a pork-packer's family; and a very large number of cases occurred not long ago in one of our Western hotels. The disease is rare in France.

The microscope has several times established the diagnosis in man, through examinations of the pectoral muscles; but this test is not final, if negative. Medical treatment is very unsatisfactory, and can only relieve symptoms.

In pork, the trichinæ may be found encysted or not. They often are in very great numbers,—Dr. Dalton, in one case, having estimated that there were eighty-five thousand to the cubic inch; in another case there were enough in one-half a pound of pork to produce thirty million young trichinæ. It is not known how long they may live, but they have been known to be capable of propagation after remaining one hundred days in putrid pork. The frequency of the disease in swine is probably as great in America as elsewhere, if not greater; but man is not so often infected with us, as less raw or underdone sausage, ham, bacon, etc., is eaten than in Europe.

Of 1,394 hogs, taken at random, and examined by the Chicago Academy of Sciences, twenty-eight were found infected with trichinæ.*

They become more rare as pigs are raised under more intelligent supervision on stock-farms, and are kept from roam-

* This enormous proportion of diseased hogs can be accounted for only on the supposition that there was a severe epidemic at that time.

Dr. Uhde has collected statistics of all the hogs examined with the microscope between April, 1871, and April, 1873, in Brunswick and twenty-four other districts (Amtsbezirken) in Germany. The total number examined was 186,312. Of these, 26 were found with trichinæ and 23 with cysticerci.

ing at large about yards, slaughter-houses, out-houses, drains, sewers,* etc. In the corn-fields of our Western States, and on our best stock-farms, they are exceedingly rare. A large amount of uncooked American bacon is eaten in the manufacturing districts of England, and the "spare-ribs," with the pectoral muscles (one of the most frequently-involved regions), are sold to the poorer classes in the vicinity of our enormous pork-packing establishments; while the muscles of the cheek are made into sausages and sold in our markets; and yet in none of these places is trichinosis especially common.†

On the other hand, in Germany twelve trichinous specimens were found in six hundred and twenty-two examinations of American bacon in Rostock; eight in two hundred and ten in Gothenburg; and twenty per cent. of that examined in Elbing contained trichinæ. Forty persons in Brëmen became quite ill with the disease in 1873, from having eaten American bacon.‡

The symptoms of trichinosis in pigs are similar to those in man. Sometimes the presence of the parasite is suspected or verified before slaughter, but very rarely. Trichinæ may be suspected in pork if the muscles, especially those of the fore part of the body, are swollen and dark from inflammation. If the larvæ are encysted, and especially if the cysts have become calcified, they may be occasionally seen (in the latter case as small white or yellowish spots) with the naked eye, or be felt upon section with a sharp knife. When not encysted, and in a large proportion of other cases, they can be detected only by means of the microscope. The impossibility

* A butcher in Erie, Pa., however, recently dressed a hog which he had himself raised with great care. The flesh, made into sausages, became the source of severe illness to several people, and was found to contain trichinæ.

† These two facts may probably be fully explained in this way: The English laborers eat such raw bacon only after it has been hung up for a long time to "season," so that the trichinæ are likely to have died long before they reach the human stomach; and, as to the second case, "spare-ribs" are so thin, that any chance trichinæ would be generally destroyed by even moderate heat, applied for a short time.

‡ Heller, in Ziemssen's Handbuch. John M. Wilson, U. S. Consul at Bremen, writes (December, 1874): "The inspection of hogs is very thorough here, the microscope being always used, and the examination is made by experts appointed by the city government for that purpose. American bacon is not inspected on importation while in the possession of the importer or wholesale dealer; it is, however, subject to the same inspection as other products of the hog when it is retailed by the small dealers from the grocery-stores or meat-shops."

of detecting the disease with the naked eye, in most cases, is especially noticeable from the fact that butchers so often suffer from it.

The trichinæ are destroyed by *thorough drying*, by *hot smoking* for twenty-four hours, by *salting* in such a way that each cyst shall be freely exposed to the action of the salt, and by *sufficient cooking*. According to Gerlach, a temperature above 133° F. kills the worms. Dr. Thudicum puts it at 158° F., but advises thirty degrees higher as a matter of security. Fiedler killed them by exposure for ten minutes to a temperature of 167° F. Pappenheim states that it is safe to eat trichinous pork that has been cooked enough to have lost the blood-color throughout, a change which takes place at 149° F., from decomposition of the blood corpuscles.

Beside those already mentioned, there are many other parasites to which man is liable; but, as they do not gain entrance to his system from the meat which he eats, and do not affect the quality of his food, they will not be here considered.

PRECAUTIONS.

The precautions to be observed, in order to avoid infection from any of the above-mentioned diseases, are, generally speaking, simple, and are threefold:—

- 1st. Prevention of parasitic diseases in animals.
- 2d. Exclusion of diseased meat, as far as is practicable, from our markets.
- 3d. Proper care to avoid eating meat which may by any possibility contain living cysticerci or trichinæ.

Pork.—As regards pork, the only meat from which man is infected with a dangerous parasitic disease, the first precaution is not easy of accomplishment, considering the readiness with which these animals devour all kinds of filth. The greatest care, however, should be used to keep them from getting access to any sources of infection. Of these sources, human excreta, the offal from slaughtered swine, and the flesh of rats, are most dangerous, and, with scarce an exception, the only ones.

Breeding pigs on stock-farms, under intelligent super-

vision, and especially keeping them away from slaughter-houses, out-houses, drains and sewers, are the most efficient means to be relied upon.

To keep "*measly pork*" out of our markets, is not difficult, with a proper system of inspection. By such a course, it has been virtually banished from the London markets, where it was sold in great quantities twenty years ago. *Trichinous pork* can ordinarily be detected only with the microscope, and Heller advises that this manner of inspection should be rigorously enforced wherever pork is sold. This has been done with good results in Brunswick for the past dozen years; and in Sweden and other places for a shorter length of time, with more or less success. Pappenheim, however, thinks (wisely, at least, in respect to this country) that such a system is impracticable, and that the only security lies in diffusing information among the people.* All pork which has been found to contain cysticerci or trichinæ, should be seized, condemned and destroyed by fire, or thoroughly treated with sulphuric acid. Simply burying such meat is obviously not sufficient; and the question whether owners should not be compensated for all property destroyed, is well worthy of consideration, with a view to preventing concealment and fraudulent sales. In every system of inspection, however, some dangerous meat, from one cause or another, will necessarily escape observation, so that the only safe rule to follow is *never to eat any pork which has not been thoroughly cooked*. It is not safe to trust to pickling and smoking, even though combined, as is ordinarily done; and it must be borne in mind that meat is seldom thoroughly cooked when cut in slices more than an inch thick. The fact that two dangerous and often fatal diseases,† which are also seldom to be reached by remedial measures, are not infrequent from eating imperfectly-cooked pork, should, for that meat, render the observation of this last precaution universal, especially as it is so easy of accomplishment.

When tapeworms are known to be present in any individual,

* Dr. Germer, health officer of Erie, Pa., instructs the pupils in the higher classes of the public schools in the natural history and microscopic appearances of the worm.

† In four hundred and eighty cases of trichinosis reported by Dr. Bradley, of Detroit, eighty-two proved fatal.

treatment should be entered upon at once, and all expelled portions of the worms should be immediately destroyed with boiling-water or fire, as there is otherwise danger of self-infection, or the infection of others, with the dangerous parasite *cysticercus cellulosæ*.

Beef.—With regard to beef, it may be said that it never gives rise to a dangerous parasitic disease in man, except in the cases of very young or of debilitated persons, and that, in any case, disease from this source is comparatively rare in this country.

The echinococcus prevails to a great extent only in those countries where dogs and cattle live in more intimate relations with man than is common in the United States. It could be readily extirpated, as Hjaltelin suggests, by shutting up dogs, and treating them medically, at proper intervals. In Iceland, at least, this should be done; and as a matter of security, in all countries, all "water-bladders" or cysts found in slaughtered animals should not only be cut out and thrown away, but they should also be destroyed by fire, instead of being allowed to drop to the floor or ground to be eaten by dogs.

LESS HARMFUL PARASITES.

The rest of the parasites which have been mentioned, interest us only as they may cause disease enough in animals to render their flesh deficient in nutritive value, or absolutely unwholesome. The appearance of such meat usually indicates nothing. It should be inspected at the slaughter-house, and sold at a diminished rate; or, in case of advanced disease, condemned. It would be difficult to find well-authenticated records of serious illness resulting from the consumption of such food, although it is not improbable that such cases may have occurred.

PARASITES AFFECTING SHEEP.

The prevention of the various parasitic diseases in sheep is a matter of vast importance, and is chiefly interesting to the agriculturist. Lambs are especially subject to them, and should be kept carefully from all infected pastures, and also

from those where the grass is so short that they must pull up dirt and parasites with their food. The question of treating, medically, all dogs used on sheep-farms, is worth considering. Inasmuch as it is now more than a century ago that Elkington's discovery of deep drainage showed in what way thousands of sheep might be saved from dying of the "rot," it is rather strange that the information thus gained has not been more generally applied. It is obvious that lettuce, watercresses, and all edible plants gathered in sheep-pastures, where the "rot" prevails, should be looked upon by man with some suspicion.

CHRONIC DISEASES OF ANIMALS.

Of the chronic diseases to which animals are subject, little is to be said. They are chiefly pulmonary consumption, the various conditions giving rise to dropsy, and the Texas cattle-fever. The latter is not at present certainly known to injuriously affect flesh for food, although in New York, six years ago, it was thought by the Board of Health to have caused diarrhœa. A very large proportion of Texan cattle were at one time somewhat affected by it, and large quantities of their flesh have been sold and eaten in our different cities with at least apparent immunity from evil results. In general, the flesh of animals, affected with chronic diseases, is inferior in flavor and nutritious qualities, putrefies early, and in that condition often causes diarrhœa and vomiting, if eaten. Only inspection at the time of slaughter is adequate to recognizing these diseases, although the muscular fibrils under the microscope appear indistinct and sometimes degenerated. In very advanced stages, such meat should be condemned as unfit for human food.

ACUTE DISEASES OF ANIMALS.

Of the simple acute inflammatory diseases, such as bronchitis, etc., which produce only very slight constitutional disturbance, still less can be said, inasmuch as they are very common, and the flesh of animals suffering from them is sold with the best in our markets. More accurate data than we now possess are needed before any positive statement can be made as to their absolute innocuousness in all cases.

Pleuro-pneumonia, now so prevalent in Switzerland, from its insidious and highly contagious character, with its long period of incubation (from thirty to forty days), probably destroys more cattle than any other known disease. During the many more or less wide-spread epidemics in this country* and in Europe, the evidence is cumulative that thousands of sick animals have been butchered and sold in many of the markets of the world, and without any serious disease being traced definitely to that cause; although there have been many individual cases out of the thousands where the flesh of such animals has been suspected of having given rise to sickness. Dr. Livingstone, however, asserts that he has seen in Africa, both among Europeans and natives, very serious illness caused by eating the flesh of cattle that had been so slightly sick with pleuro-pneumonia that the disease was hardly noticeable, and the flesh was apparently sound.† In these cases the virus was not destroyed by thorough cooking.

Since the introduction of the disease into Great Britain, in 1842, the mortality from carbuncle has increased in England from 1 to 5.8, and that from phlegmon from 2.5 to 8.1 in 10,000 deaths. A similar fact has been noticed with regard to Scotland; and in both cases the increased mortality has been ascribed to the fact that so much of the diseased meat had been eaten.

Prof. Gamgee states that in a convict establishment, where such animal food was eaten, there occurred forty or fifty carbuncles a month among 1,520 prisoners.

The attempt to inoculate calves with pleuro-pneumonia, so as to substitute a mild disease for a fatal one, has met with some success, especially in the hands of a few wealthy stock-owners in England, who have found themselves repaid for their great outlay of time and money.

The *hoof and mouth* disease, or *epizootic aphtha*, is ordinarily quite mild, and, if uncomplicated, of short duration (about two weeks), and likely to end in recovery without

* The promptness with which this disease was stamped out by the efficient measures adopted by the legislature in Massachusetts should be an example to all countries.

† May not these symptoms have been in part at least attributable to rapid putrefactive changes in the meat after death?

any other special treatment than attention to cleanliness, food, fresh air, etc.

The external signs of the disease are quite marked. When it prevailed in Paris, from 1834 to 1839, it was not thought necessary to exclude the meat from the markets, and we have the high authority of Levy that no apparent ill results followed. Such meat is not now condemned in *all* the cities of Europe where inspection is thorough, provided the disease is uncomplicated with others, and not severe. Dr. Thorne states that animals suffering from hoof and mouth disease, during the late epidemic, were constantly killed and sold in England, often as first-class meat. In no case had he heard of disease in men attributed to it, and Mr. Simon corroborates his testimony. Since the introduction of the disease into America, in 1870, by a cow imported from Holland, our experience has been similar.

On the other hand, Prof. Gamgee knew a pack of hounds to become very ill from eating the raw flesh of a cow that had been killed while suffering from epizootic aphtha, and in some cities of Europe both milk and meat of the diseased animals are condemned.

The *Rinderpest* of the Germans, *typhus contagieux* of the French, or cattle-plague, now creating such havoc among cattle in the Crimea, is a disease often attended with severe constitutional symptoms, is easily recognized before death, and is very fatal. The dressed meat does not differ in appearance from that of healthy animals. Parent Duchatelet states that enormous quantities of beef so diseased have been eaten in France without any ill results having been noticed from it, and we have the same kind of testimony with regard to the great epidemic in Great Britain, in 1865. Pappenheim also asserts that experience has not thus far shown that there is danger from eating meat diseased by the rinderpest; and Prof. Brücke, of Vienna, even says that the Bohemian peasants dug up, cooked and ate such meat after it had been condemned and buried by the inspectors, and that no known cases of illness resulted therefrom.

Some isolated cases, however, have been reported in

Europe, where even death was thought to have been the result of eating it.

The facts remain, too, that beef so diseased was declared unwholesome by the Belgian Academy, that it is still seized and condemned in many, if not most, of the large continental cities of Europe, and that Dr. Letheby, for twenty years Health Officer of London, in reviewing the epidemic of 1865, states that "it would be very dangerous to permit the unrestricted sale of such meat in all stages of the disease."*

The cattle-plague (also called steppe-murrain, from the steppes or plains in Russia, where it originates) is enzoötic, and, with the rigid care exercised by Russia, Austria and Prussia, will be, in all probability, confined to its source,—the broad plains of Western Asia,—or at least be kept from becoming again a general epidemic, unless quarantine laws be neglected or rendered inoperative in another European war.

In this country, according to the best authorities, the disease has never yet appeared; and those cases which have been from time to time reported as such were, in all probability, something else. It might, without much doubt, be transported across the ocean through the medium of diseased cattle or their hides.

Anthrax, sometimes accompanied by a condition of the leg, which gives it the name of *malignant erysipelas*, rather prevalent, in 1873, in a part of New England,† but generally rare in this country, probably renders the flesh of animals affected with it more dangerous as food than any other known disease, with the exception, possibly, of small-pox in sheep. And yet, in the early stages, the diseased meat is often eaten with apparent impunity, giving rise simply to slight diarrhoea, and in a certain number of cases to no evident unpleasant results whatever.

Menschel reports several cases of persons being affected with carbuncle from this cause. Simon knew of a family of eleven persons, of whom nine ate meat from a bullock which had been killed in not a late stage of the disease. The flesh

* Report on the Sanitary Condition of London, 1865, p. 50.

† Report on the Diseases of Domestic Animals, in Connecticut, by Noah Cressy, M.D.

was eaten on the same day as slaughtered, and looked perfectly good after a few dark spots had been cut out. Of these nine persons, all became quite ill, and two died.

Prof. Gamgee states, in the "Edinburgh Veterinary Review," that he has known diseased cattle slaughtered, the beef of which had the appearance of being the best a butcher can show; and yet dogs, pigs and ferrets have died from eating it, and horses died from drinking the water into which the blood of these animals had run.

In regard to *splenic apoplexy*, possibly only another form of the disease, the same author says, in his report to the medical officer of the Privy Council in London: "Many of the worst forms of disease are very sudden, and only slightly affect the color and texture of the muscular apparatus. A fine, fat bullock, with florid meat, may have died from splenic apoplexy, or been merely killed *pro forma*, when already on the point of death. Remove the spleen, and the carcass appears sound. Yet dogs and pigs in this country die from eating, although first cooked, any portion of such cattle." Prof. Cressy, of the Agricultural College at Amherst, calls attention to the danger arising from the consumption of such meat, and to the large number of evil consequences known to be directly attributable to it. In fact, one would suppose that it can hardly be otherwise of a disease so malignant and so rapidly fatal. Moreover, not less than sixty persons have recently been reported as having become seriously ill from eating beef diseased by anthrax, which, as is usually the case, looked perfectly sound and healthy, so that its condition could have been ascertained only from information got by inspecting the internal organs of the animal. In a certain proportion of cases there are carbuncles on various parts of the body, or a leg may be swollen and discolored. Usually, however, the chief, if not the only, indication of disease is in the spleen.

Charbon, or *black leg*, so called from the almost gangrenous appearance of one of the hind legs, is so dangerous a form of splenic disease, that Prof. Cressy advises the destruction even of the hides of all animals affected with it.

"*Braxy*," which causes such great mortality among sheep in Scotland, is probably anthrax in a modified form. The flesh is eaten very largely, and in the vast majority of cases

without striking ill results, by the poorer classes of the Scotch, but only after having been salted and kept for a long time. Scotch physicians say that even then such a practice is dangerous. Pappenheim, who states that there is no danger from eating the flesh of animals suffering from the cattle-plague, advocates the seizure at the slaughter-houses and the burial of all the parts of animals that have had anthrax.

There is no direct evidence to prove the statement that *all* erysipelatous diseases are dangerous; but it is more than probable that erysipelas, following severe bruises in transportation, should be very sharply looked after by our health officers.

Mr. Lindsay, whose experience as inspector at Pittsburg entitles his opinions to great weight, states that a few hours even are sufficient to produce a poison throughout the entire system of a severely bruised animal. Especially should we be on our guard against creatures that have been trampled to death, and either butchered for the market, or "tried out" for their tallow, as erysipelas of an aggravated form is apt to be present.

The *Texas cattle disease*, or splenic fever, which caused so much destruction to American herds six years ago, apparently is developed in a chronic, mild or latent form in cattle feeding on low, undrained land in certain parts of our southern seaboard States. If brought rapidly to the North, they communicate the disease in an acute and very fatal form to cattle which eat food or drink water contaminated by their excretions (Report to the United States Commissioners of Agriculture, 1871), although not themselves subject to the acute form of the disease unless they have first remained in the Northern States long enough to become acclimated, and then become exposed to the contagious matter, whatever it is, of freshly arrived herds.

In many of our large cities, the meat of such animals was sold and eaten in large quantities, without any marked evil results being clearly traced to its consumption, and that, too, although the disease was of such severity that cattle often died twelve hours after the attack. Nevertheless, in New York, the Board of Health attributed "the rapidly increasing

mortality from diarrhoeal disorders, and especially the suddenness of death, in adults as well as in children," in 1868, partly to its use as food; and they gave it as their opinion that the flesh of animals affected either with the acute or chronic form of the disease, should not be sold as food for man.

As a result of his investigations on splenic fever for the United States Commissioners of Agriculture, Mr. Dodge says: "While meat of diseased animals can never be deemed wholesome food, the milk and flesh of cattle affected with this disease do not generally cause immediate sickness"; and Mr. Eaton also says of a quite fatal epidemic in Illinois, "not a single case of disease or injury resulted from the use of meat or milk."

Prof. Gamgee, too, of London, in his report on this disease to the United States Commissioners of Agriculture, in 1871, speaks as follows: "I was called upon a fortnight ago to reply to the question whether, if any of the flesh of the sick animals happened to be sold, it was probable that human beings might suffer. I unhesitatingly asserted what I repeat now, that the meat is not poisonous, and is incapable of injuring human beings. To that opinion I now adhere."

At the same time, he qualifies his statement in these terms: "If I should be asked what regulations should be made by city authorities in relation to the traffic in diseased meat, I have simply to declare what I have said for many years past; viz., that it is impossible to draw a line between health and disease, except as the two conditions are known to medical men; and, notwithstanding the apparent disadvantages of condemning more meat than there is any necessity for, it is essential that a sanitary officer should be supported on the broad general principle that a diseased animal is an animal unfit for human consumption."

Under the influence of excitement, lack of food, overcrowding and the various conditions of torture incident to their passage from the fields of Texas to the markets of our Northern cities, some bullocks have shown symptoms of the acute disease. In about a month after leaving their native pastures, cattle infected with the latent form of the disease become acclimated under the new conditions of life, and lose the power of communicating the acute form to Northern herds.

Cold weather destroys the infectious virus, whatever that may be.

Another enzootic disease peculiar to the Alleghany Mountains, to certain parts of Illinois and the Mississippi Valley, is the "milk sickness" or "trembles," popularly so called, the pathology of which is not yet accurately known. It originates in low woodland districts, and may possibly be due, in some degree, to certain poisonous plants found in the infected localities. Quite serious illness is caused by eating the flesh, or milk, or even cheese made of the milk, of affected animals.

Prof. Cressy has known choleraic diarrhœa to be caused by eating the flesh of cows slaughtered while suffering from *parturition fever*, and Prof. Gamgee confirms this testimony.

The "*hog-cholera*," * and "*spotted typhus*," * called in Germany *Typhoeser Rothlauf*, and a disease said to resemble scarlet fever (? *Einfacher Rothlauf*), occur in pigs; and it is strange to say that such meat has been eaten without any manifestation of untoward results. The flesh of the former should *always* be condemned, and, in Germany, parts of the latter are cut off and also condemned.

With the *small-pox* of sheep,† the case is different. The flesh of affected animals is pale, moist, emitting a nauseous odor, and almost invariably giving rise to sickness in people who eat it.

When an enlarged humanity teaches us to fatten our horses for the market, instead of working them to death,‡ it may be well to remember that the disease most common in them is the *glanders*. Decroix states that hundreds of horses so diseased were eaten during the siege of Paris, with no apparent ill result, and that he had himself eaten such without an

* These are, perhaps, popular names for erysipelatous diseases of different degrees of severity, but their pathology is not clearly made out.

† For accounts of epidemics of this disease in the United States, see the Reports of the Commissioners of Agriculture.

‡ Five thousand are eaten each year in Paris. There are several markets in Berlin for the sale of horse-flesh, which is sold more or less in sixteen different states of Europe; and butter, of especially delicate flavor, has been made of the fat of horses.

unpleasant symptom following. It may be fairly questioned, however, whether the immunity in these cases was not rather apparent than real.

DISEASED MEAT IN GENERAL.

In one of our towns in Massachusetts, many families were made ill from eating meat which did not look suspicious, but came from a sick bull.

In Genoa, when diseased meat was sold, it is said that epidemics were severe and gangrene common; and many cases of illness have been reported in Edinburgh from eating steaks from diseased animals.

When the plague started from its foul nest in Barbary, last year, an investigation by the English government proved, among other facts, that those natives who ate of the flesh of sheep affected with carbuncular sores suffered soonest and the most severely from the disease.

Dr. Letheby has (in 1860) investigated a case where, of sixty-six people who ate diseased meat, sixty-four were attacked with more or less severe diarrhoea, vomiting and prostration, and one died.

Prof. Gamgee asserts that about one-fifth of all the meat sold in London markets, ten years ago, came from animals more or less diseased, and he also says, "Dead-meat markets supply diseased meat for all, and not for the poor alone, as some suspect."

Prof. Danforth, of Chicago, writes: "I have several times found beef upon my table which was abnormally tender, yet fresh apparently. In these cases, the microscope showed the muscular fibre to be in a state of fatty degeneration, similar to what has been found in experimental starvation."

Prof. Cressy says that the "traffic in diseased milk and meat in this country is now immense," and he attributes very bad consequences to their use.

Prof. Cameron, of Dublin, traces many cases of illness to diseased meat; and one of our correspondents in this State writes: "Of this I am certain, that much meat of very inferior quality is sold here to the laboring classes, but can point to no positive ill result, except indigestion."

The extreme difficulty of tracing all disease to its source,* and the absence of exact experiments in regard to diseased meat, should make us very slow in saying that what causes serious results in so many cases is attended with more than apparent immunity in others, even if more numerous.

"It is by no means improbable that among the poor of large cities the secret sale of decomposed and unwholesome meat is a very frequent cause of disease and death." (Dr. Taylor, *Med. Jurisprud.*)

It should be remarked, too, that diseased meat decomposes with remarkable rapidity, thereby doubling the chances of evil results.

"Seeing that serious consequences may ensue [from eating diseased meat], it is only right to look upon all such meat as unsafe and unfit for human food" (Dr. Pavy); and, after reviewing all the testimony in favor of its apparent innocuousness, Dr. Parkes states that, "Animal poisons may be neutralized or destroyed by cooking or digestion, but the composition of muscle must exert an influence on the composition of our nitrogenous tissues which no preparation or digestion can remove."

Dr. Brown, of New Haven, writes: "It seems to me that no line can be drawn as to where or when meat becomes injurious or bad. From that which is certainly wholesome to that which is certainly bad, there is a regular gradation. . . . A certain meat in questionable condition might not illy affect one person eating it, while it would another."

TESTS OF DISEASED MEAT.

Diseased meat is often of a light pink color, soft instead of resistant to the touch, and generally loses more than twenty-five per cent. of its weight in cooking. The experience of sanitary officers the world over, however, proves that, in the majority of cases, inspection at the slaughter-house is absolutely necessary in order to exclude diseased meats, even of the most dangerous kind, from our markets. The testimony on this point is simply overwhelming.

* The late Dr. John Ware used to say that three-fourths of his patients got sick and got well again without his ever knowing what ailed them.

SEVERELY BRUISED MEAT.

The flesh of animals that have been trampled nearly, if not quite, to death, or in which erysipelas has supervened upon an injury, is sometimes of a dark purple tint, and is properly considered diseased.

The testimony of butchers and of health officers at hearings in this city, in 1871, and in London, in 1873, establishes beyond a doubt the fact that it is not in all cases possible to detect such meat from simple inspection of the carcass; and members of this Board have recently seen in small slaughter-houses in Brighton, two animals in regard to which it was impossible to speak definitely on this point.

EFFECTS OF STARVING.

A condition analagous to disease is produced by starving, and the medical inspector of the District of Columbia calls attention to the fraud upon the community from the sale of such meat. The Board of Health of New York has reported cases of inflammation of the stomach in steers, with high fever, dependent on this cause; and the streets of New York, St. Louis, and Indianola have not infrequently borne witness to the furious delirium of starved cattle, while Claude Bernard has shown that the amount of blood in artificially-starved animals is diminished by about one-half. The testimony of a butcher, doing a large business in London, is, that "if a bullock is left without hay or water for a day, that bullock loses some ten shillings in quality, and it loses in weight." He also says that he gives this as an accepted calculation among butchers, and not as his individual opinion.* And yet food recently absorbed into the system, within a very few hours before slaughter, passes quickly into decomposition, and taints a whole carcass.

MEAT FROM VERY YOUNG ANIMALS.

Very young meat can hardly be said to be absolutely injurious,† unless it be also diseased (as is too often the case)

* Report, etc., on Noxious Trades. London, 1873.

† French and English butchers have told me that fetal calves are removed from slaughtered cows, and are considered quite as delicacies by certain of the Jews in

by exhaustion, lack of food and drink, and suffering of various kinds. It possesses, however, very little nutritive value, is not readily digested, and is very generally condemned. Different countries or cities place the lowest age at which it may be sold at various points between two and six weeks.

SALTED OR PICKLED MEAT.

Many of the inferior qualities of meat are salted or "cured" in brine, processes which withdraw water, and with it the soluble phosphates and albumen and myosin and extractive matter from the flesh, and therefore deteriorate its nutritive qualities very decidedly.

BAD MEAT EASILY SOLD.

The ease with which diseased, dead, dying, very young or even foetal calves, can be dressed and smuggled to the Bologna-sausage maker, where they are prepared for sale away from supervision, can readily be seen in the neighborhood of Boston; and in order to convince one's self that sick, starved, maimed, dying and dead animals reach our cities, not in very great numbers indeed, every week, it is only necessary to inspect a cattle-train as it arrives from the West. If one asks at the various rendering-establishments whether *they* get such animals, the answer, "Yes—sometimes," compels the inference so strongly brought out by the examination in regard to the sale of bad meat in Boston, in 1871, that such meat is sometimes sold for food in our markets; and we are now absolutely powerless to prevent it, as we have no system of inspection. *Inspection, and nothing but inspection*, can prevent this.

EFFECTS OF TERROR.

How much animals suffer from the sight of suffering in others, if not actually in physical pain themselves, and how far they are capable of anticipating torture, are still matters of dispute. Many, if not most butchers think (and it is natural that they should think so), either that all animals, or that the least intelligent of them, are entirely indifferent to

Europe; and, under the name of "slunk veal," or "staggering bob," they are relished by the peasantry of Ireland. In neither case have I been able to find any mention of bad results from eating such meat.

unpleasant sights and sounds; but there is in the community a more or less strong feeling to the contrary; and in some cities especial pains are taken to prevent any blood or any of the processes of slaughtering from being seen by animals awaiting their turn.*

Various statements have been made of the general injurious effect of terror upon the secretions of animals (and by inference upon their flesh also), although I have not been able to find any proof that such influences, when uncomplicated, do more than diminish the quantity of milk, etc., without altering the quality.†

The importance of keeping milch cows free from disturbing emotions is well known to dairymen; and the flesh of animals is said by many stock-raisers to differ as food according to the general care, freedom from emotional disturbances,

* At the two large abattoirs in Lyons, the guards are required to enforce a law to this effect, and it is thought that the flesh of cattle is injured by allowing them to witness the slaughtering of other animals. At Zurich a leathern strap is slipped over the animal's horns, completely covering the eyes, before he is taken into the slaughter-house. In the centre of this strap is a perforated iron block, the hole being directly over the centre of the forehead. Standing in this hole is a short, sharp, hollow steel spike, which is driven into the brain by a single blow of a heavy hammer, producing instant unconsciousness. The base of the brain is then at once broken up by means of a small iron rod, producing absolute death; the large blood-vessels are then severed. [S. H. M. Byers, U. S. Consul.]

At the abattoir at Providence, R. I., and at several other places in the United States, the following practice prevails for killing unmanageable steers. Each bullock in turn is driven into a small pen, while a man standing above its head severs the spinal-cord (*if the animal remains still*), by a single skilful stroke with a long, heavy iron spear, and the animal falls as if shot. This, the Spanish method, if performed as in Spain and in Naples, where the animal is in an inclosure so small as to prevent his moving about, is very swift and certain. As often practised in this country, it is very cruel, from the fact that the pens are too large, the animals run about more or less, aim is uncertain, and death slow and painful.

At Springfield and Lowell, Mass., and in some other cities, cattle are shot one by one.

In England, Scotland, and Ireland the law requires that large animals shall be killed with the *pole-axe*, which perforates the skull at the first stroke; and inspectors are required to enforce the acts for the prevention of cruelty.

In America, the more or less clumsy and inhumane method used by the Greeks of Homer's time is quite generally prevalent, and consists in first stunning the animal by one or more blows, well or ill directed, on the head. The throat is then cut, as is done in all the above cases. The Jewish method (stringing up by the hind leg and cutting the throat) is also used to some extent in the United States, but, from the cruelty involved in it, is generally condemned by those with whom it forms no part of a time-honored rite. (See note, p. 181.)

† "In a cow giving milk, there is no doubt that the secretion may be arrested or diminished in quantity by terror or other depressing emotions. The instances related of similar causes producing a deleterious change in the *quality* of the milk are less authentic."—Dr. J. C. Dalton.

diet, etc., which they have enjoyed during life, although the microscope and chemistry do not at present aid us in saying why it should be so.

In London, in 1873, a prominent butcher even testified that "inferiority and want of skill in slaughtering injure the value of the animal slaughtered"; and another stated that "the more care the things are killed with, the longer they keep."

The evidence collected from sixty-five correspondents in different parts of the world, being for the most part members of Boards of Health, who have had especial opportunities for observation, is as follows:—

Three state that secretions are so altered in animals by terror as to render their "milk or flesh" injurious as food, but they give no facts in support of their theories.*

One thinks that the flesh is affected, and that it putrefies early.

Fourteen think that terror, if prolonged or excessive or accompanied by exertion, would injure the meat.

Fourteen think that animals do not suffer from terror in slaughter-houses.

Ten think that they do so suffer, but doubt whether their flesh is injuriously affected.

Nine think that terror cannot injure flesh.

Seventeen are unable to give any opinion, although having had excellent opportunities for observation.

An eminent physician at Frankfort-on-the-Main, occupying a high position in the *Sanitätsconsilium*, states that he cannot find in any German or French publication any intimation that the terror or trembling witnessed in the slaughtering affects injuriously the flesh of animals.

The following opinions are from eminent members of Boards of Health:—

"The flesh can be altered by terror only when violent exertions (heftige Bewegungen) accompany it."—(*Ghent.*)

"It is generally supposed that animals suffer somewhat from terror. The butchers, however, declare that the flesh is not injuriously affected from their seeing the various processes of slaughtering."—(*Zurich.*)

* Of these three, one knows no facts, one "knows facts," but has not answered inquiries as to what they are, and the third does not state whether he refers to milk, or to meat, or to both.

"I believe cattle do suffer from terror, but swine and other animals do not. I do not think the flesh is injuriously affected, at least not to any great extent."—(*Pittsburg.*)

Animals "become excited and terrified if present at the butchering. If allowed to stand over three or four hours, the flesh would be injuriously affected."—(*Baton Rouge.*)

"It is natural to suppose that they suffer from terror; but to what extent their flesh is injuriously affected, an opinion, if expressed, would be only conjectural; but we incline to the opinion that its value would be seriously impaired."—(*Richmond.*)

"It is supposed that animals suffer from terror, but it is not generally the opinion of meat dealers that mere terror, independent of physical exertions, injures the qualities of their meat as food."—(*Des Moines.*)

"I have seen animals terrified; but I do not think that mere terror, unaccompanied by violent muscular exertion, would affect the quality of their flesh."—(*Dublin.*)

"It is supposed that animals suffer from terror, but I do not think it affects the flesh, except when furious. It is then much darker in color."—(*Leith.*)

"It [terror] has a tendency to set them wild, and the meat is liable to putrefy."—(*Belfast, Ireland.*)

"Prolonged terror must prove injurious, but I can adduce no facts."—(*Belfast, Ireland.*)

"I think it not improbable that milk secreted shortly after an animal has been greatly terrified would be unwholesome. I cannot give any opinion as to the effect of terror upon meat."—(*London.*)

"I believe that terror, if prolonged or repeated, is liable to render the milk injurious, but that it has no substantial effect upon the flesh, unless it should be in degree and duration beyond all probable limits."—(*Atlanta.*)

"Cases of apparent injury [from terror] can always be explained by unsuspected disease."—(*Baltimore.*)

"Mental emotion, in my opinion, produces changes in both the milk and meat."—(*Nashville.*)

"The affirmative is demonstrated as respects secretions; evidence respecting meats cannot be entirely conclusive."—(*New York.*)

"Terror may dangerously vitiate the milk of cows. That the flesh should be injured by the same cause is less evident; for such an effect I should suppose *prolonged or often repeated* as well as extreme alarm must be necessary."—(*Philadelphia.*)"

* At the new abattoir in Jersey City, where 200,000 cattle and 300,000 sheep are killed yearly (although not working at more than one-half its full capacity), the eighty pens are separated simply by open iron railings, so that everything is in open

A leading butcher in Washington gives the following opinion, but it is only fair to say that few others agree with him :—

“Every practical butcher knows by experience that an animal being terrified before slaughtering will cause its meat to present a bloody and puffed appearance.”

EFFECTS OF EXHAUSTION.

Although, during our late war, many medical inspectors saw animals killed immediately after a long march, and while overheated, without any evident ill effects in those who ate the flesh,* and although wild creatures are often killed under more or less similar conditions, yet there are many facts to prove that the flesh of such animals is at times injurious. Medical-Inspector Hamlin states, as a result of his extensive experience, that such meat is deleterious. Old hunters make special efforts to prevent their dogs from “worrying” game, and many prefer the deer shot quietly at night to that killed under the excitement of the chase.

One of our correspondents in Massachusetts says : “A beef was slaughtered in our town that had to be supported to the abattoir exhausted from overdriving. The meat tainted, under favorable circumstances for preservation, in less than twenty-four hours.” And another writes : “I have known of one case of an overheated ox which was slaughtered. The meat was dark in color, and became tainted in a few hours.”

“The flesh of animals* that have been excited before death, as by overdriving or by torture, has frequently proved unwholesome.”—(*Letheby*.)

Dr. W. Holbrook, of Palmer, Mass., says :—

“I know from my army experience, that the flesh of overdriven cattle in hot weather produces diarrhœa and dysentery. As surgeon-in-chief, I have refused to have a single pound issued with the troops on the march. When eaten, fermentation resulted, and not digestion; and with tired men, diarrhœa and dysentery were the direct results.”

view. The advantages which were expected from this plan were light, air and *scrupulous cleanliness*, in which it is certainly a model; but experience has also shown that the animals, although frequently trembling, are unusually quiet and docile in appearance and conduct. This stillness has been thought by some observers to be possibly due to their being completely terrified, or in a measure paralyzed from terror. The clean and dry stock-yards, the well-filled mangers and watering-troughs, and the comfortable sheds for protection from the weather testify that the company is not wanting in humanity.

* In the new abattoir at Dresden, Saxony, animals are not of necessity absolutely condemned as unfit for food when they are killed to save their dying from exhaustion.

We have the high authority of Liebig for the statement that five persons were once made seriously ill by eating the flesh of an animal which had struggled violently in a snare for some hours immediately before being killed.

"There have been cases known where symptoms of poisoning have resulted from the eating of game which had been greatly distressed and worried before death; also from the eating of the meat of animals that had undergone long marches directly before being slaughtered."—(*Pappenheim.*)

"A poison pervades the tissues of cattle that have been driven, of others exhausted by disease, of cows and other animals slaughtered after many hours of difficult labor, and of those dying of parturition fever, . . . and abroad attention is paid that animals be rested. . . . The meat (of such animals) cooked has induced colic, thirst, vertigo, debility, and at times death."—(*Prof. Gamgee.*)

The testimony of a butcher in regard to London slaughter-houses is, that "you cannot injure an animal while alive without its showing it when dead." And, finally, at a meeting of butchers in this State, not one was willing to say publicly before the others, that he would offer for sale for human food an ox that had been slaughtered while overheated, and excited by very violent exertion of considerable duration.*

EFFECTS OF ARTICLES OF FOOD.

The effect of deleterious articles of food or of medicine upon the flesh of animals is more easily traced; and arsenic and antimony, used even as external applications, have produced bad symptoms in those who ate the flesh, even of parts remote from the points of application, of animals so treated.

Three hundred and one persons once ate of the meat of an ox that had taken two ounces of tartar-emetic before being slaughtered; of these, one hundred and seven suffered from vomiting and purging, and one died. Antimony was found in the tissues of the ox, and in the stomach of the man who died (*Dr. Kreutzer*).

* I am indebted to Dr. Cabell for the following remarkable fact:—It is the custom of many butchers in Virginia, just before killing beeves for the market, especially if they be old, to have them run for two or three hours by dogs; and they say that it has the effect of making the meat more tender.

Lead has been known to be so taken up by the tissues of plants, as to give rise to symptoms of poisoning in the cattle eating them.* The epicure can readily detect the taste of turnips in mutton; and the canvas-back duck is thought to gain its fine flavor from marine plants on which it feeds. This question is especially interesting to us in respect to hogs, which are so often fed on all kinds of refuse. They have sometimes died from the effects of drinking the milk of diseased cows (Prof. Cameron, of Dublin), diseased meat has proved fatal to them, and they become diseased by eating unsound grain, putrid meat, or even from an exclusive diet of fresh animal food.

Pappenheim states, unequivocally, that feeding swine with putrid animal matter produces poisonous food.

Dr. Parkes and others have remarked, in regiments in India, that pork produced diarrhoea among the soldiers, when no cause for it could be ascertained, except that the hogs had fed on offal not always fresh.

"Sows fed on flesh give birth to pigs which cannot be reared, but die shortly after being born. If very young pigs are admitted to the flesh diet they also soon die. Pigs of two or three months old seem to thrive on flesh, although the mortality among them is sometimes considerable. Pigs fed on flesh have a peculiarly soft diffuent fat, emit a strong odor from their bodies, and, after death, putrefy more rapidly than others."†

The loathsome disease produced in milch cattle by feeding them exclusively on "swill" is too familiar to us, through our daily papers, to require more than a passing notice.

AMOUNT OF MEAT CONDEMNED.

During the past year there were condemned—

At Chicago: 611 quarters of beef, 166 carcasses of mutton, 107 calves, 7 hogs, etc., etc.

At New York: 20 cattle, 1,103 calves (997 less than a month old), 268 sheep and 50 lambs, 293 hogs, 39 tons of meat.

At Pittsburgh:‡ 27 cattle, 35 sheep, 10 tons of meat.

* Taylor on Poisons, p. 512.

† Fifth Report of the Medical Officer of the Privy Council, London, 1863. This statement refers to animals fed exclusively on flesh. There is no evidence to prove that a mixed diet, containing meat or offal, injures hogs in any way.

‡ This does not include the animals dead at the stock yards, or killed in transporta-

At Washington, during the latter half of the year: 6 cattle, 8 sheep, 11 calves, 1 hog, 7 tons of meat.

In London an average of 100 tons of meat is condemned yearly.

The inspectors of New Orleans and Pittsburg call especial attention to the fact that the quality of meat had very much improved since inspection previous to slaughter had been insisted upon.

The conclusion is unavoidable, that large quantities of meat, unsuitable for human food, are sold in all large cities, where there is no rigid system of inspection before and after slaughtering.

STANDARD FOR CONDEMNING MEAT.

The question as to what meat should be condemned has generally been answered on the broad ground that no diseased meat is fit for human food. In London, the health officer requires to be seized "the flesh of all animals infected with parasitic diseases, of animals that may have been suffering from acute, febrile or wasting diseases, and of those which have died from natural causes or by accident, as well as all meat tainted with physic or in a high state of putrefaction." *

At Bâle, during the past year, animals were condemned on account of endocarditis, pyæmia, degeneration of the lungs and of the liver (phthisical), peritonitis, abscesses, erysipelas, parasitic disease, death from suffocation, and dropsy. Calves less than two weeks old are condemned entirely; those between two and three weeks of age, may be sold for sausages, and all others, if not diseased, go to the markets.

The internal organs alone were condemned of animals in the early stages of pulmonary consumption, of those in whom hydatids were found, and of animals with superficial erysipelas.† It will be seen that none were absolutely condemned on account of simple inflammatory disease or in the early stages of chronic disease. The meat is classified, however, and only perfectly sound, young, fat meat can be sold as of first quality.

tion, and amounting to 551 cattle, or 0.124 per cent. of the whole number transported; 4,410 hogs, or 0.51 per cent. of the whole number transported; 1,173 sheep, or 0.15 per cent. of the whole number transported.

* Letheby, On Food; London, 1874.

Dr. F. Mueller.

Opinion on the continent and in England seems to be tending in this direction, that all meat which is known to be injurious should be sweepingly condemned, and that all other should be rated of different qualities.*

"Meat, the normal physical characters of which are altered by these diseases [febrile and emaciating], is not only wanting in the nutritious qualities which it should possess, but is liable to be indigestible or to produce diarrhoea. I am of opinion that it is very questionable whether the meat from animals in the early stages of febrile diseases is *per se* injurious at all. It is, however, to be recollected that such meat quickly undergoes chemical change (decomposition in some form), and that then it may become injurious; and there is some probability that the unwholesomeness from this cause may precede the actual manifestation of ordinary putridity. Practically, then, such meat ought not to be regarded as sound in the same way as the meat from animals not in a febrile state. It might, on economic grounds, be unwise to prohibit altogether the sale for food of such meat; but in my opinion the slaughtering and sale should be effected under supervision. The animal should be thoroughly bled, and the meat should be at once cooked and sold in the cooked condition."†

Dr. Letheby, referring to the imperfect system of inspection necessary among the fifteen hundred slaughter-houses which are scattered over London, says:—

"We are either condemning large quantities of meat which may be eaten with safety, and are therefore confiscating property and lessening the supply of food, or we are permitting unwholesome meat to pass almost unchallenged in the markets."

Dr. T. K. Chambers says:—

"I feel sure that great waste of assimilable food arises from the destruction of damaged meat. It should be sold properly labelled, at a low price; and the passing it off as good meat made a fraud under the adulteration act."

The English army is supplied by law with only sound, healthy meat. In time of war, Prof. Parkes directs inspectors that they should allow the issue of the meat of all animals ill with inflammatory and contagious diseases, with the exception of small-pox and, perhaps, splenic apoplexy,‡ taking care, however, that the animals be bled thoroughly, that only the flesh and no internal organs be eaten, and that

* Two grades would be sufficient, as in France.

† Dr. E. Ballard, Med. Officer for Islington, London. Compare also his article on "Diseased Meat and Public Health," Brit. & For. Med. Chir. Review, vol. XXI., 1858.

‡ Practical Hygiene, 1873, p. 202.

the meat be well cooked. This course he recommends as a less evil than being without animal food entirely.

REMEDIES.—INSPECTION.

In the facts presented there are surely grounds for the suspicion expressed a short time ago by one of our most careful and eminent observers, that "we are a much meat-poisoned people"; and the question arises, How shall we rid ourselves of the evil?

While, on the one hand, the community overrates the actual dangers arising from eating the meat from diseased animals, as shown by the great diminution in the sale of all meat when disease is especially prevalent among cattle, on the other hand we vastly underrate the very great importance of having all kinds of food, meat included, perfectly pure and adapted to our ever-varying conditions.

If bad meat produces no ill results in certain individuals, it may do so in others; or, it may be eaten with impunity by a person while in vigorous health, who, if tired or ill, could not eat it without suffering some injury.

So much has been said of late of the misery produced by the injudicious and improper use of alcoholic drinks, that we have almost entirely overlooked the equally important question of the use of improper food.

We search the four quarters of the globe for materials with which to build our muscles, and bones, and nerves, and brains, and yet very little careful consideration is needed to show that we do our work often with a carelessness that would be considered criminal in the architect of a public hall.

Up to a certain point, the intelligent classes can protect themselves from the evil influences of bad meat, although they often do not see it until it is served on their tables. Beyond that point, and in all cases with the uneducated classes, it is the duty of society to interfere between the cupidity and ignorance of unscrupulous dealers on the one hand, and the ignorance and helplessness of the people on the other. This can only be done by a careful system of *inspection*.

Such a course would be welcomed by the best butchers, who desire to sell only sound and wholesome food. They are, in-

deed, themselves often imposed upon in their purchases of animals; and, at Pittsburg, where inspection before slaughter has been insisted upon for some years, they at times apply to the inspector for his opinion before buying. If butchering badly-bruised, trampled, exhausted and diseased animals for the market were restricted by law, greater care would be taken in their transportation, and they would be brought to our markets in better condition, provided the law were enforced.

Dealers in stock would find it for their interest, too, to prevent disease, the facility with which they can now impose upon the community tending to foster a spirit of apathy or neglect, whereby animals are kept on ill-drained or infected pastures, in badly-ventilated barns, with poor food, and bad water, etc., conditions directly causing disease.

In cases of gross fraud or violation of the law, there might be a penalty even to losing one's license, as in Berlin; or if there be a forfeiture in money, the informer might have a part, as suggested by a prominent butcher at the hearing in Boston on the sale of bad meat; or the names and addresses of convicted parties, with the fines imposed, might be published, as is done in Dublin.

It is not possible to inspect every animal at the time of slaughter without a large corps of inspectors, or an unjustifiable amount of interference with private business; nor is that necessary. Every creature might be inspected within twenty-four hours of the time of slaughter, and all doubtful ones might be marked to be examined again carefully with the internal organs.

Without a system of rigid and frequent inspection, slaughter-houses cannot be prevented from becoming unclean, and a nuisance to their neighborhood;* nor can animals be insured proper food and humane treatment. We are simply putting the evil out of our sight and not correcting it, by having our cattle transported to a distant city for slaughter without inspection. About one-tenth of the meat sold to the

* Compare the experience of the Board of Health of New York, in this respect. Reports, 1871 *et seq.*

The old abattoirs in Berlin became exceedingly dangerous and filthy, simply from want of proper care and inspection; so that petitions were sent to the officers of the government for their abatement.—[Der neue Berliner Viehmarkt; Dr. Langmann.]

six hundred thousand people now supplied by the Boston markets during the winter time is brought dressed from the Western cities; of this quantity about one-third is probably as good as any we eat, although there is some difference of opinion both in this country and in England as to the length of time that it will keep fresh. Much of the remainder as thoroughly demands inspection as any meat well can. A large part of it is from animals that are sold at very low rates in Chicago, some of it at \$1.75 per hundred pounds on the hoof; and the animals are so miserable in many cases, that no one would buy them for transportation to the Eastern cities, if, indeed, there were any probability of their living to get there.

RULES FOR THE MANAGEMENT OF SLAUGHTER-HOUSES.

What, then, are the requirements of every slaughter-house?

First. Absolute cleanliness, both to avoid offence to people living in the vicinity and to prevent early putrefactive changes in the butchered meat.*

Second. Animals should be provided with suitable shelter and abundant food and water. It is better that they should not be fed, however, within six or eight hours of the time of slaughter, as recently absorbed food promotes early decomposition.

Third. Should overdriving, exhaustion, etc., be unavoidable, there ought to be (as in Europe), if practicable, a rest of several days, or at least of one day, to allow the feverish tissues to reassume their condition of health. The testimony is almost universal that a feverish condition in cattle is incompatible with *thorough* wholesomeness of the flesh; and, even where it is customary to kill creatures immediately after a long journey, the butcher who wants meat for his own use picks out an animal and lets him rest a few days before killing him.†

* "The putrid emanations from bad slaughter-houses are such that meat cannot be long kept in them or in shops adjoining them" (Fifth Report of the Medical Officer of the Privy Council, London). Nor must it be forgotten that a low temperature does not always prevent meat from being contaminated while exposed to air vitiated by decaying animal matter.

† *Thoroughly* exhausted animals, at the stock-yards in Berlin, are removed and slaughtered by a butcher of the police. Such parts as may be found still fit for food are given up to the owners, and the remainder is carried to the public flaying establishment.

Fourth. It is quite generally acknowledged that the best way to kill animals for the market is that which is the quickest, the most painless, which secures the complete removal of the blood from the body, and which does not excite or harass them.

Unnecessary cruelty* (in a sense, a certain amount of cru-

* By the "Berichte des Sanitätsconsilliums von Basel-Stadt vom Jahr, 1870," I find that the proprietor of a slaughter-house and some butchers have been fined for avoidable cruelty in killing cattle in that city.

In speaking of our method of slaughter, which obtains also in many parts of Germany, Mr. Kreismann, U. S. Consul-General at Berlin, says: "This frequently requires from ten to fifteen blows before the animal is killed, and is attended by circumstances making it brutal. Efforts, therefore, are being made to substitute a method of slaughtering by means of the *bouterolle à la masque*," recently invented by Bruneau, of Paris, and improved by Leykauf of Nuremburg, under the name of *Schlachtmaske*, or *slaughtering-mask*. This slaughtering-mask has been tried in Berlin, Dresden, Vienna, Frankfort-on-the-Main, and in France, with most gratifying success, and has already been described as being in use at Zurich (see note, p. 170). If necessary, a small rod is thrust through the perforation in the skull, destroying the base of the brain completely. In the "Dresdner Nachrichten," of Oct. 29, 1874, for which I am indebted to L. Brentano, Esq., U. S. Consul at Dresden, is a detailed account of the mask, calling attention to the cruelty of the present mode of slaughtering, and to the painless and instantaneous death accomplished by the new method. The "Frankfurter Beobachter," of Sept. 6, 1874, speaks of the fact that the wildest and most ungovernable animals are thus rendered quiet and manageable. In the "Nurnberger Presse," of Aug. 15, the editor sums up the advantages of this mask as follows: *First.* The duration of suffering is reduced almost to nothing. *Second.* The flesh and internal organs are in better condition.



Third. The brain is natural in appearance, not congested.

Fourth. Less strength and less exposure to danger of being injured are necessary on the part of the butchers.

Its compulsory use is strongly recommended.

Louis Moll, Esq., president of the society for the prevention of cruelty to animals in Koenigsberg, Prussia, states that his society has "provided these *bouterolles* and strongly advocates their general introduction, as best calculated to relieve animals from the terrible and protracted sufferings they formerly had to undergo in the process of being killed." He sends also the accompanying wood-cut.

elty is involved in the very act of killing) should always be avoided on account of its possibly baneful influences on the animals themselves, on the ground of humanity, and because it demoralizes and degrades a community which suffers it.

Fifth. All offal should be kept in closed receptacles, and removed before putrefaction has begun,—a process for which six hours is often sufficient in summer.

Sixth. No hogs should be allowed to live on the offal.

1. Because hogs feeding on the refuse of animals are under circumstances favorable for spreading parasitic diseases.

2. Because the flesh of such hogs is unwholesome.*

3. Because a nuisance is thereby created from the accumulated fifth.

In many cities this rule is rigidly enforced.

Seventh. All parasites of whatever kind should be destroyed, with the flesh or organs containing them or not, as each case may require.

Eighth. No slaughter-house should be permitted close to dwellings or public highways.†

Ninth. All butchers should receive licenses, to be revoked at once, in case they are detected violating the law;‡ and no person should be allowed to kill even small animals outside of licensed houses.§

Tenth. In large cities the inconveniences arising from killing animals for the market, and the nuisances from the various dependent businesses, are, by common consent, reduced to a minimum in abattoirs.||

Eleventh. Nothing further need be said of the necessity of daily inspection in cities and large towns, or wherever cattle

*Recent experiments in Germany have shown that if restricted to a diet of even fresh meat, they become diseased.

† In one town in Massachusetts, there is a large slaughter-house close to the public school; its influence on the education of the girls and boys must be far from favorable.

‡ As is already the practice in New York City.

§ One of our correspondents in Massachusetts states that, generally speaking, so far as his town is concerned, diseased meat when sold is dressed for the market in out-of-the-way places by people who are not butchers. It is to be remembered, however, that bad animals generally find their way to the cities, as the concealment necessary for killing and selling them is much less easy in small towns than in large cities.

|| The Prussian law of 1868 is a good one. It authorizes cities and towns to erect public abattoirs, and to make it obligatory to have all slaughtering done in them; also to have the animals as well as the meat inspected.

are received by rail, except that this is decidedly for the interest of those persons who wish to do business cleanly and honestly.

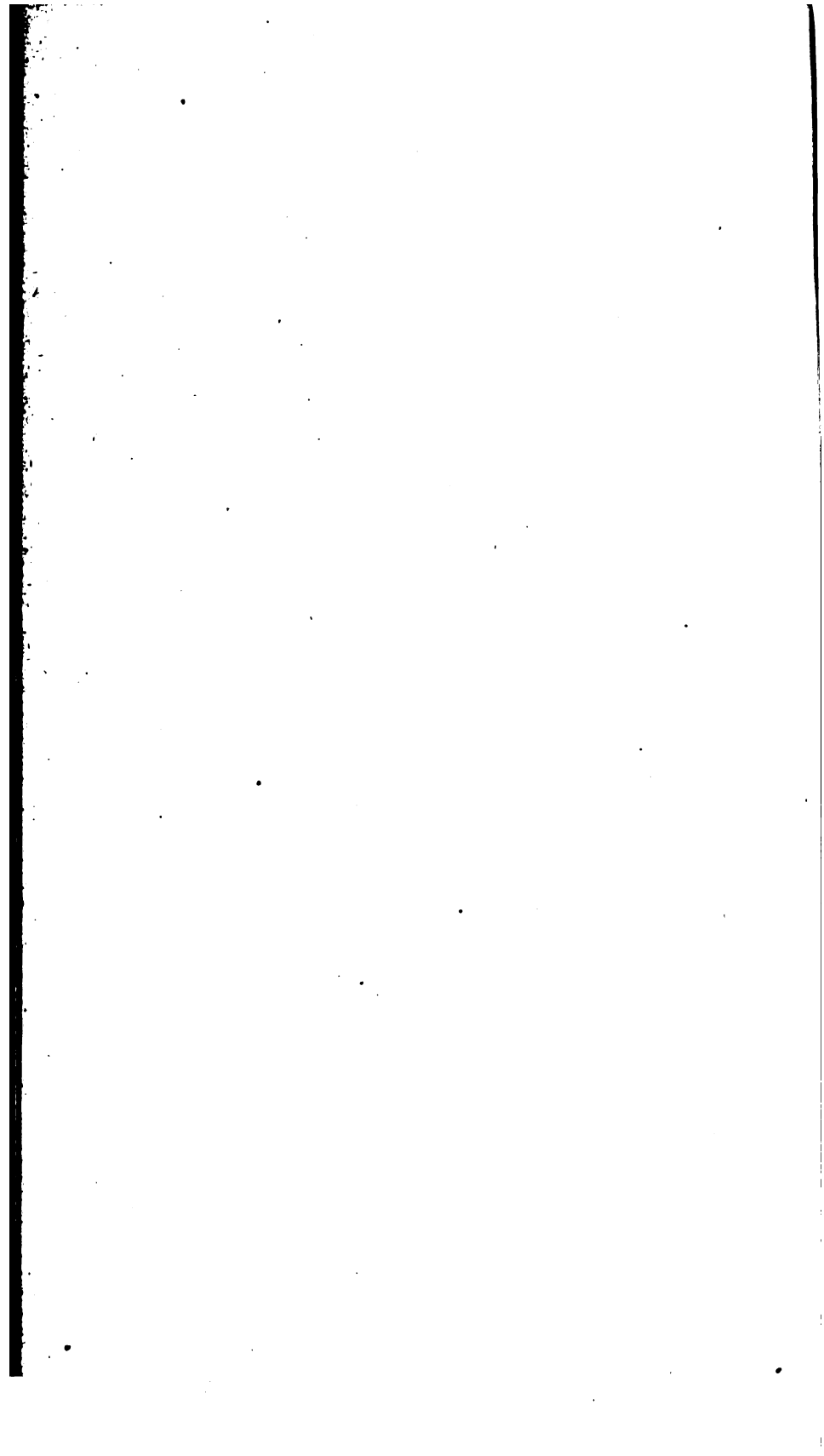
ADVANTAGES OF INSPECTION.

An intelligent inspector who is familiar with cattle and the details of transportation, might accomplish a great work, and by inspecting all animals before death, he would seldom let unwholesome meat slip through his hands. By correcting abuses in transportation; by seeing that no evil comes from infected trains and stock-yards in case of epidemic disease;* by seeing that food and water are supplied; by putting a stop to all cruel treatment as far as possible,—an inspector would return to the State many fold the small sum needed for his pay.

It cost Massachusetts \$70,000 to get rid of pleuro-pneumonia in cattle, and the laws of the State, passed to meet the emergency of a general outbreak of such diseases, are not excelled in efficiency and completeness in the world.

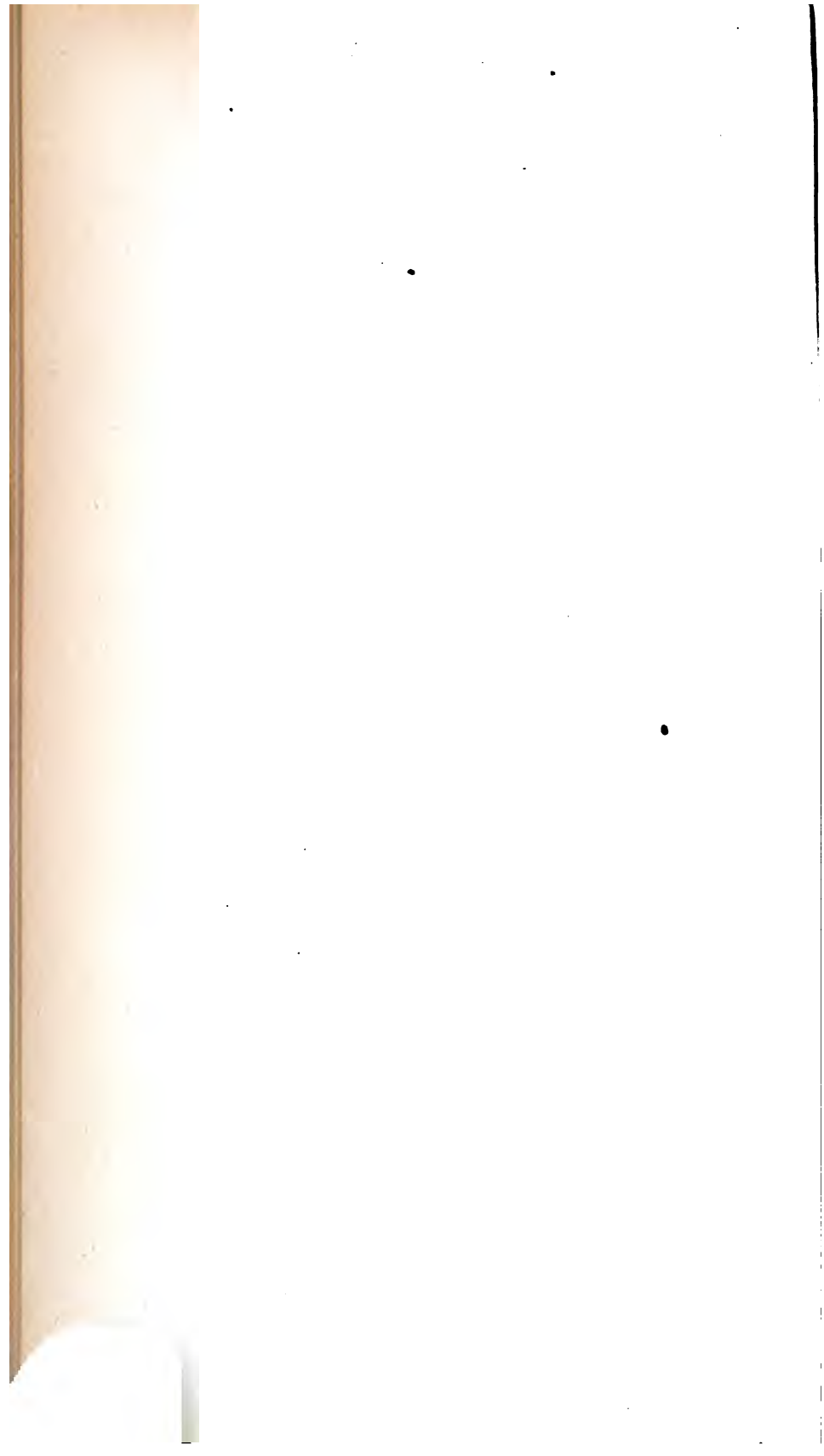
Would it not *pay* to do more to prevent disease in animals, deaths from transportation and the many evils arising from the sale of bad meat?

* Connected with the magnificent new abattoir in Berlin is a disinfecting department, and Dr. Langmann states that nothing further is needed to thoroughly purify transportation-cars, even in time of epidemics, than thorough washing with water at a temperature of 169° F.



THE BRIGHTON ABATTOIR, ETC.

- I. REPORT OF MR. J. N. MERIAM, *President of the Butchers' Slaughtering and Melting Association.*
- II. REGULATIONS OF THE ASSOCIATION.
- III. REVISED SANITARY REGULATIONS OF THE STATE BOARD OF HEALTH.
- IV. ANALYSIS OF PEARL BUTTER.
- V. AN ACT TO INCORPORATE THE BUTCHERS SLAUGHTERING AND MELTING ASSOCIATION IN BRIGHTON, AND FOR OTHER PURPOSES.
- VI. AN ACT CONCERNING SWINE-SLAUGHTERING ASSOCIATIONS.



THE BRIGHTON ABATTOIR, ETC.

I.

REPORT OF MR. J. N. MERIAM,

PRESIDENT OF THE BUTCHERS' SLAUGHTERING AND MELTING ASSOCIATION.

To the Secretary of the State Board of Health.

DEAR SIR:—The directors instruct me to make the following report. The past year has been one of progress at the abattoir. Eighty thousand dollars have been expended in new buildings on the grounds of the Association, including two blocks of dwelling-houses, put up by members of the Association. Two blocks of slaughtering-houses have been erected upon the same general plan of the others, with such improvements as our experience suggested. The last block built is the largest, and, in its apartments, equal, if not superior, to any of those previously erected; it is roomy, and will accommodate a large amount of work. There are now sixteen beef-slaughtering houses, whose full capacity is four hundred and fifty cattle a day.

With these additions, the Association has now provided facilities equal to the slaughtering of all the cattle, sheep and calves needed to supply the demands of Boston and vicinity. This will require that the work be so distributed that each house shall do something near its capacity. While the lessees of a number of the larger houses are now prepared to dress beef for other parties, to any extent that will probably be demanded of the Association, yet the time will come when another block will be called for, in order that each occupant may be allowed the privilege of doing only his own work. Fifty-three thousand four hundred and nineteen cattle, twelve thousand five hundred and thirty-six calves, three hundred

and three thousand two hundred and ten sheep, were slaughtered during the year ending December 31, 1874; of which, twenty-one thousand three hundred and seventy-five cattle, one hundred and twenty-eight thousand four hundred and six sheep, and one hundred and forty-three calves, were slaughtered during the months of August, September, October and November. The heads, feet, blood and offal of these animals have been manufactured, at the rendering-house, into the several products of oil, grease, bones, hoofs and fertilizer. All of these products are of the very best quality, and find a ready sale at good prices. Only a part of the tallow produced at the abattoir has as yet been rendered at the works, much of it being taken away to small try-houses in and about Brighton.

This is all wrong, and we trust will very soon be remedied. All the rendering of tallow should be done at the rendering-house, where all necessary devices and appliances are in readiness to perform the work without offence. The same success has attended the process (performing it without offence) as resulted from the first year's experience. The rendering-house is ample for the accomplishment of all the work that will be required of it for many years. Plans are now being matured by which the soup from the rendering-tanks will be utilized, and this part of the work will be in operation within a few weeks.

A block of two tripe-houses, with stables, have been erected, and are now in process of completion. The foundations of a third house, also, have been laid, and are now waiting to receive the buildings, for which plans have been made and approved. When these buildings are finished and put in operation (which will be in the coming season), they will be sufficient to treat all this material produced at the abattoir.

A one-story building, three hundred and eighty feet long, to be used as a storehouse, has just been completed. Beside three new buildings, put up within the yard to accommodate the business, it was found necessary to make quite extensive alterations and additions in and to the rendering-house, to perfect the working of the system. A part of the columns were found to be too slender to support the weight required of them, and were replaced by larger ones. A new elevator,

one of the largest and finest in the State, has been added, to be used in delivering our products from the rendering-house. The machine repair-shop has been furnished with a complete set of tools, including lathes and drills. Tanks for rendering, and one additional dryer, and also a large triple press, have been put into the same building, making in all an outlay of ten thousand dollars. The yards have been enlarged, and now contain one hundred thousand square feet, and they have been covered with planking throughout, at a cost of six thousand two hundred dollars.

The grounds about the premises have been graded and improved. Two acres of new land have been made by filling, on an average of four feet, the marsh land lying along the banks of the river (all of which is now occupied by buildings, yards and driveways), at a cost of about four thousand two hundred dollars. Twenty-three hundred feet of drain-pipe, five hundred and twenty-five feet of heavy four-inch water-pipe, and twenty-one hundred and twenty-three feet of steam and small water-supply pipe, have been used during the year. Eight men or firms have come to do business at the abattoir within the year, making the total number, now slaughtering here, twenty-six.

We have been at work twenty months, during which time we have been perfecting our works, making additions to our accommodations, and laboring to make the abattoir, in all respects, a desirable and economical place for those engaged in slaughtering cattle and sheep, and preparing meat for the market. It now only remains, for all those interested, to avail themselves of the privilege here provided, in order to render the enterprise a complete success, both in a sanitary and financial point of view.

Respectfully yours,

J. N. MERIAM, *President.*

II.

REGULATIONS

FOR THE CONDUCT OF THE BUSINESS OF THE BUTCHERS' SLAUGHTERING AND MELTING ASSOCIATION.

[Presented by the Association, and approved by the State Board of Health at their meeting, October 1, 1873.]

I. There shall be a managing director, appointed by the Board of Directors, who shall have the general charge of the premises of the corporation, and of all work done on said premises, subject, however, to such rules and regulations as may from time to time be adopted by the corporation or imposed by the State Board of Health, conformably to the charter of the corporation.

II. Said managing director shall have the entire control over all assistants and employes of the corporation, and shall keep a constant supervision of the rendering-house and the basements of the slaughter-houses, and shall see that all rules and regulations of the corporation and of the State Board of Health are fully observed.

III. Every person occupying any slaughter-house, or killing or dressing any animal therein, shall, as soon as the animal is dressed, cause its offal, tallow, head and feet to be dropped through the openings in the floor which shall be designated for the purpose. Whenever any animal is killed, the blood-hole in the floor shall be opened, so that all blood may run through the same. The hides and tripe of beef-cattle shall also be dropped immediately through the respective openings provided for the purpose. While the killing is in progress, the water-hole in the trough shall be kept closed. After the killing is over, the blood-hole and all openings, except the water-hole, shall be closed. The water-hole shall be opened, and the floor and walls of the slaughter-house shall be thoroughly washed down.

IV. The corporation shall provide in the basement a sufficient number of properly-constructed wagons to receive the said offal, tallow, heads and feet, tripes, blood and hides. The managing director shall cause one of said wagons to be kept constantly under each opening in the floor, while any killing is going on, and until the slaughter-house floor is cleared up after such killing.

V. All hides shall be removed, under the direction of the managing director, to a part of the rendering-house to be called the "hide-room," where they shall be weighed and delivered to any person who shall have authority from the butcher to receive them for removal from the premises of the corporation; or, if the same are to be cured by the corporation, or on its premises, they shall be salted and taken care of under charge of the managing director.

VI. All tallow shall, in like manner, be removed to the rendering-house, and weighed and delivered to any person who shall have authority from the butcher to receive it for removal from the premises; or, if the same is to be rendered by the corporation, it shall be raised on the elevator to the rendering-room, and immediately rendered.

VII. All tripes shall be removed in like manner and delivered to the person authorized to receive them.

VIII. Any butcher who sells his hides or tallow for removal from the premises, shall notify the managing director of the name of the purchaser, and shall pay to the corporation his due proportion of the actual cost of the labor employed in removing said hides and tallow from the basement of the slaughter-house to the rendering-house, and of delivering the said hides and tallow to the said purchaser. He shall also take care that the purchaser of said hides and tallow shall come each day, at such time as shall be fixed by the managing director, with suitable wagons to receive and remove from the premises all hides and tallow ready for removal, so that no tallow or hides shall remain on the premises of the corporation, except such as are to be manufactured by said corporation, or on its premises.

IX. The corporation shall render all tallow that the persons hiring or occupying a slaughter-house on its premises shall request, and all that shall not be removed from the premises, as provided in the preceding regulation; and shall sell or cause to be sold all tallow so rendered; shall keep proper books of account, showing the weights and amounts received from the sales of the tallow of each butcher, and shall receive, for manufacturing and selling said tallow, such percentage of the proceeds of such sales as may be fixed by the directors of the corporation from time to time. But this regulation shall not prevent the corporation from buying of any butcher his crude tallow, at such price as may be agreed upon.

X. The corporation shall, in like manner, remove and render the heads and feet of all animals slaughtered on the premises, and shall pay for each set of heads and feet such prices as the directors may fix from time to time, subject to the approval of the State Board of Health, unless the parties shall agree upon a price.

XI. All blood and offal shall be forthwith removed from the basement of the slaughter-house to the rendering-house, and raised on the elevator to the proper story for manufacturing it. Offal shall be rendered while fresh, and the scrap of all offal and all blood shall be immediately dried. All blood and offal shall be the property of the corporation, and the manufactured fertilizers shall be properly packed and stored for sale by the corporation.

XII. Pelts of sheep shall be dropped into the basement under the slaughter-house, and removed every day.

XIII. All stables shall be kept clean and sweet. The corporation shall remove the manure from the stables and the yards as often as need be, to keep the said stables and yards inoffensive. The manure shall be the property of the corporation.

XIV. The corporation shall furnish the necessary power for hoisting, and the necessary hot and cold water for cleans-

ing the meat and the slaughter-houses, and also water for the stables and stock-yards. In the use of said machinery and water, the butcher shall exercise all reasonable care to avoid breaking the machinery and waste of water, or damage to the buildings.

XV. All leases shall be executed in the name of the corporation, by the president, and shall require the lessees to conform to the regulations which may be made from time to time by the corporation and the State Board of Health.

III.

COMMONWEALTH OF MASSACHUSETTS.

STATE BOARD OF HEALTH, }
BOSTON, July 30, 1874. }

In accordance with section 4, chapter 365, of the General Statutes, 1870, the following revised regulations have been adopted by the State Board of Health for the conduct of the business at the abattoir of the Butchers' Slaughtering and Melting Association; and strict compliance therewith, both on the part of the Association and of its individual tenants, will be insisted on and enforced by the Board.

By order of the State Board of Health,

F. W. DRAPER, M.D.,

Secretary pro tempore.

REGULATIONS.

1. Only animals in health shall be slaughtered for food.

Dead or diseased animals, when received in ordinary consignments of live-stock to persons slaughtering on the premises, may be prepared for rendering in the basements, and thence immediately transferred to the rendering-tanks and rendered.

2. No injury or unnecessary pain shall be inflicted on any animal at the premises of the Association.

An ample supply of food and water must be served to animals at seasonable times.

3. The occupants of slaughter-houses shall see that all parts of animals, slaughtered on their premises, are at once put in the places provided for their reception; that the offal, tallow, heads, feet, blood, hides and tripe are dropped, as soon as may be, through those openings in the floor, which are specially designed to receive them; that, while the killing is in progress, the blood-hole in the trough is kept open, and the water-hole is kept closed; and that, when the slaughtering is finished for the day, the water-hole is opened and all other holes are closed, and the floor and walls of the slaughter-house are thoroughly scraped, washed and cleaned.

The close-pens, cooling-rooms, loading-sheds, stables, and all other parts of the premises, must be kept clean and in orderly condition.

4. No parts of animals slaughtered elsewhere shall be brought to the premises of the Association, except by special permission of the State Board of Health, issued in writing.

Permission to bring blood or offal (except fresh heads and feet) will not be given in any case.

5. The corporation shall provide, in the basement, a sufficient number of properly-constructed wagons to receive the offal, tallow, heads, feet, blood, tripe and hides. One of said wagons must be constantly kept under each opening in the floor, while killing is going on, and until the slaughter-house floors are cleaned after the killing.

All parts of the slaughtered animals which are to be rendered, dried or salted, on the premises, must be so treated without delay.

All hides and skins, tallow or tripe, belonging to any tenant of the corporation, who desires to have them removed from the premises before being rendered, salted or cured, shall be so removed at once. In no case will such material be suffered to remain more than twelve hours before removal.

6. The corporation shall render all tallow produced on the premises that the persons hiring or occupying such premises

shall request, and all tallow that is not removed from the premises as provided in the last section of the preceding regulation. And after such rendering, the corporation shall return to each person his proportionate share of such rendered tallow, unless some other disposition of the same shall be mutually agreed upon. And all hides and skins, not removed as provided for in the last section of the preceding regulation, shall be salted by the corporation and returned to the owners. And the corporation shall receive for the rendering and salting, provided in this regulation, such compensation as shall from time to time be fixed by the directors, subject to the approval of the State Board of Health. But this regulation shall not prevent the corporation from buying from any tenant his crude tallow, or his hides, skins and tripe, at such price as may be agreed upon.

7. The corporation shall at all times keep the basements of the slaughter-houses thoroughly washed and cleaned; and shall provide that no blood, offal or manure shall at any time enter the sewers.

The rendering-house shall be kept in good order, and none of the gases from the rendering-tanks, driers or condensers, shall be permitted to escape into the open air or into the sewers.

Manure from cattle-pens, close-pens and stables, and from the stomachs and intestines of animals slaughtered, must be removed from the premises as often as may be needed to insure cleanliness, and all the grounds of the corporation must be kept in an orderly condition.

8. The corporation shall render the heads and feet of all animals slaughtered on the premises, and shall pay for each set of heads and feet such price as the directors may fix from time to time, subject to the approval of the State Board of Health, unless the parties shall agree upon the price.

9. All blood, intestines, and other offal, the property of the corporation, shall be rendered while fresh, and all scrap and blood shall be dried as soon as may be.

10. The corporation shall furnish the necessary hot and cold water for cleaning the meat and the slaughter-houses; and also water for the stables and stock-yards.

In the use of the machinery and water, the tenant shall exercise all reasonable care to avoid breaking the machinery, wasting the water, and injuring the buildings.

11. All leases shall be executed in the name of the corporation, and shall contain a condition that the lessees shall conform to the foregoing regulations, and to such regulations as shall hereafter be made by the State Board of Health, or by the corporation with the approval of the State Board of Health.

IV.

CHEMICAL ANALYSIS OF PEARL BUTTER.

By J. M. MERRICK, B. Sc.

The sample I procured was yellowish, looking like genuine butter, rather unlike the genuine in texture, being "short" and crumbly, of a pleasant taste, but lacking in the delicate flavor and peculiar taste of real, first-class butter. It is sold as an artificial product, and at a price much below that of genuine butter. I can see nothing objectionable in its use.

The following is the result of my analysis :—

The sample contained—

Fatty matter,	.	.	.	.	.	82.22
Water, .	.	.	.	.	.	12.20
Salt, .	.	.	.	.	.	5.07
Casein, .	.	.	.	.	.	.50
Coloring-matter, .	.	.	.	.	.	trifling.
						<hr/> 100.00

I found the melting-point to be 107° 6' Fahrenheit.

Stohmann, the most recent authority, gives the results of a series of analyses of butter, of which I annex three.

QUALITY OF BUTTER.	Fat.	Water.	Salt.	Casein.	Extractive Matter.
Extra fine,	86.95	11.68	1.43	.19	.85
Standard,	85.50	12.29	.93	.57	.59
No. 3,	82.91	14.42	1.78	1.78	1.07*

* The fat of suet, from which artificial butter is made, consists of about forty-six per cent. of stearine (of which nearly four-fifths are removed in the processes of manufacture), the remainder being palmitine and oleine; and that of genuine butter contains (beside about sixty per cent. of palmitine, thirty per cent. of oleine, and a small amount of stearine) four other fats in a proportion of about two per cent., which are peculiar to milk, and give to dairy butter its well-known agreeable flavor; but they are easily resolvable into glycerine and four volatile fatty acids, especially in presence of a nitrogenous substance like casein, which acts as a ferment. It is to the liberation of these volatile acids that the "rancid" smell and taste in common butter become due. Angell and Hehner (London, 1874) place the melting-point of the best butter at 96° 8' F., or slightly below the temperature of the stomach. They think that there are chemical means by which the sophistication of butter with other fats can be detected; but other chemists generally, and especially Wanklyn (London, 1874), are not able to agree with them. The differences in the quantities of salt in the two analyses may be due to peculiarities of taste, one examination having been made in Germany and the other in America. The coloring matter, used also in the dairy for the same purpose, is a harmless vegetable substance from a tropical plant.—[Editor's Note.]

V.

AN ACT TO INCORPORATE THE BUTCHERS SLAUGHTERING AND MELTING ASSOCIATION IN BRIGHTON, AND FOR OTHER PURPOSES.

Be it enacted, etc., as follows:

SECTION 1. Horace W. Baxter, Horace W. Jordan and B. Francis Ricker, their associates and successors, are hereby made a corporation, by the name of the Butchers' Slaughtering and Melting Association, to be located in the town of Brighton, for the purpose of carrying on the business of buying and slaughtering cattle, sheep and other animals, and of melting and "rendering" establishments, subject, however, to the provisions hereinafter contained, and to all general laws now or that may hereafter be in force applicable to such corporations.

SECTION 2. Said corporation may take and hold, by pur-

chase or otherwise, such parcel of land not exceeding one hundred acres in extent, and situated in Brighton, within two miles of the Cattle Fair Hotel, as the state board of health shall by vote determine to be suitable for the carrying on of said business; and said corporation shall within sixty days from the time it shall take any land otherwise than by purchase, file in the office of the registry of deeds for the county wherein said lands lie, a description thereof, as certain as is required in a common conveyance of lands, together with a statement of the purpose for which the lands are taken, which description and statement shall be signed by the president of the corporation.

SECTION 3. The said corporation shall be liable to pay all damages that shall be sustained by any persons in their property by the taking of any land for the purposes of this act. Any person who shall sustain damages as aforesaid, and who shall not agree upon the damages to be paid therefor, may apply by petition for the assessment of his damages, at any time within one year from the taking of said land, to the superior court, in the county in which said land is situate. Such petition may be filed in the clerk's office of said court, in vacation or in term time, and the clerk shall thereupon issue a summons to said corporation, returnable if issued in vacation to the then next term of the said court, held fourteen days at least after the issuing of said summons, and if in term time returnable on such day as the court shall order, to appear and answer to the said petition; the said summons shall be served fourteen days at least before the return day thereof, by leaving a copy thereof with the clerk of said corporation, and upon the return of said summons duly served, the said petition shall stand as a cause in said court, and all questions of fact relating to the damages sustained by the petitioner shall be heard and determined, and the amount of such damages shall be assessed by a jury of said court, unless the parties shall in writing waive their right to a jury-trial and agree that the question of said damages shall be determined by the court; and the verdict of said jury, being accepted and recorded by said court, or the award of the court, if jury-trial shall be waived, shall be final and conclusive, and judgment shall be rendered and execution issued thereon, and

costs shall be recovered by the petitioner if the amount of said judgment shall exceed the amount offered him for his damage by said corporation before the filing of said petition; otherwise said corporation shall recover its costs.

SECTION 4. Said corporation shall proceed to build upon said land suitable buildings for the slaughtering of cattle, sheep and other animals, and for melting and rendering purposes, and all necessary stables and outbuildings. But no building shall be erected until the plans thereof with all details of construction shall have been submitted to and approved by said state board of health, or some person designated by said board to examine said plans. All the business of said corporation shall be carried on in accordance with such regulations as said board shall from time to time establish and furnish in writing to the clerk of said corporation, and for each violation of any one of said regulations, said corporation shall be liable to a fine of not less than twenty nor more than five hundred dollars, to be recovered by indictment against said corporation. Subject to the foregoing provisions, said corporation may manufacture and sell any of the usual products of said slaughtering and melting business, or may lease or permit other persons to use their buildings or parts thereof on such terms as may be agreed upon. And each member of said corporation shall have the right to slaughter on the said premises, subject to such regulations and such tariff of prices as said corporation may by vote at any regular meeting establish, and to the regulations of the said board of health as aforesaid. And any person engaged in slaughtering or other business on the premises of said corporation who shall violate any of the said regulations of said board shall be liable to the penalty herein before affixed to violation thereof by said corporation.

SECTION 5. The capital stock of said corporation shall consist of two hundred thousand dollars, to be divided into shares of one hundred dollars each, and said corporation shall not take any land, as herein before provided, or commence business, until the sum of one hundred thousand dollars at least shall be paid in cash.

SECTION 6. The state board of health may, if in their judgment the public health shall require, order any person,

at any time engaged in the business of slaughtering within six miles of the Faneuil Hall Market in Boston, and not upon any island in the harbor, to slaughter his cattle, sheep, or other animals, upon the premises of said corporation: *provided*, that thirty days' notice of an intention to pass such an order shall be given to such person by said board, and that after such notice is given such person shall have continued to conduct his business in such a manner as in the judgment of the board is injurious to the public health; and the supreme judicial court, or any justice thereof sitting in equity, shall have power to enforce any such order of said board by injunction. And whenever said board shall make such order as aforesaid, they shall also fix, in said order, the price per head which said party so served with said order shall pay to said corporation for the use of a place in its said building for slaughtering as aforesaid, but said price may be fixed as a certain sum of money, or as a certain portion of the animal, with its blood and offal, and said corporation shall be bound to permit said party to slaughter on its premises, on the terms so fixed by the order of said board, unless said corporation and said party shall agree upon some different terms. Any person aggrieved by any order of the board of health, as in this section provided, shall have the right to appeal from said order in the same manner, and with the same effect, as such right is now given in chapter twenty-six of the General Statutes to a person aggrieved by an order of a town board of health, prohibiting the carrying on of offensive trades. In case of any appeal as herein provided, the application for a jury shall be made to the superior court in the county wherein the party prohibited transacts his business, if in session in said county, or in vacation to any justice of said court. *[Approved June 16, 1870.]*

VI.

AN ACT CONCERNING SWINE-SLAUGHTERING ASSOCIATIONS.

Be it enacted, etc., as follows:

SECTION 1. Three or more persons who shall have associated themselves together by an agreement in writing, such as is

described in section seven of chapter two hundred and twenty-four of the acts of eighteen hundred and seventy, with a capital of not less than one hundred thousand nor more than five hundred thousand dollars, with the intention to constitute a corporation for the purpose of buying and slaughtering swine, and of melting and rendering and pork-packing, shall become a corporation upon complying with the provisions of the eleventh section of said act, with all the powers, rights and privileges, and subject to all the duties, limitations and restrictions conferred by said act upon corporations except as herein-after provided, and subject to all general laws which now are or hereafter may be in force, applicable to such corporations.

SECTION 2. Such corporation may take and hold by purchase or otherwise such parcel of land, not exceeding one hundred acres in extent, and situated in such place as the state board of health shall by vote approve or determine to be suitable for the carrying on of said business; and such corporation shall within sixty days from the time it takes any land otherwise than by purchase, file in the office of the registry of deeds for the county wherein said lands lie, a description thereof, as certain as is required in a common conveyance of lands, together with a statement of the purpose for which the lands are taken, which description and statement shall be signed by the president of the corporation: *provided, however*, that no land shall be taken under the provisions of this section, without the approval in writing of the mayor and aldermen of the city, or the selectmen of the town in which the land is taken.

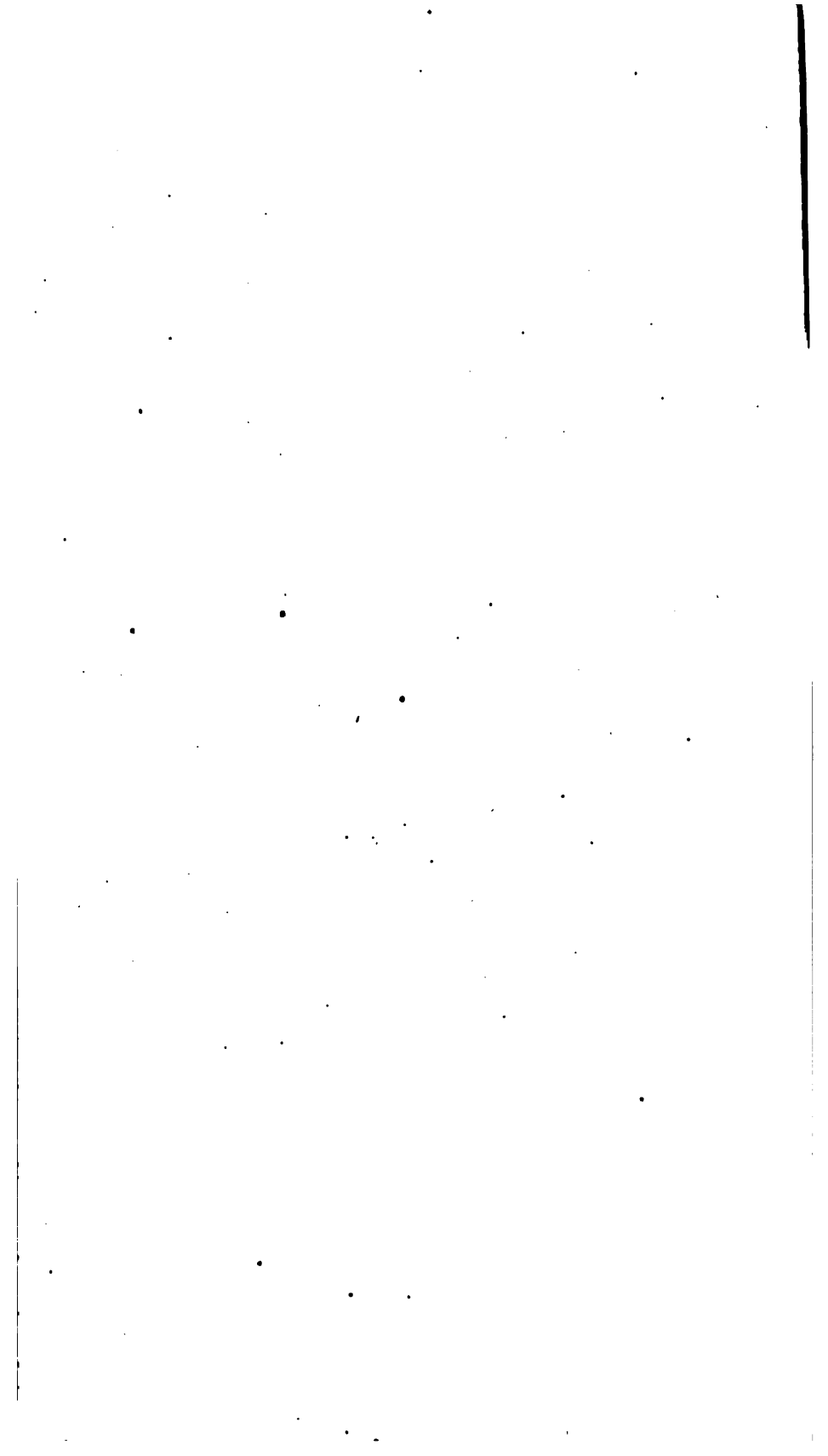
SECTION 3. Such corporation shall be liable to pay all damages sustained by any persons in their property by the taking of any land for the purposes of this act. Any person sustaining damages as aforesaid, and not agreeing upon the damages to be paid therefor, may apply, by petition, for the assessment of his damages, at any time within one year from the taking of said land, to the superior court in the county in which said land is situate; such petition may be filed in the clerk's office of said court in vacation or in term time, and the clerk shall thereupon issue a summons to the corporation, returnable, if issued in vacation, to the then next term of the said court, held fourteen days at

least after the issuing of said summons ; and if in term time, returnable on such day as the court shall order, to appear and answer to the said petition ; the said summons shall be served fourteen days at least before the return day thereof, by leaving a copy thereof with the clerk of the corporation, and upon the return of said summons duly served, the said petition shall stand as a cause in said court, and all questions of fact relating to the damages sustained by the petitioner shall be heard and determined, and the amount of such damages shall be assessed by a jury of said court, unless the parties in writing waive their right to a jury trial and agree that the question of said damages shall be determined by the court ; and the verdict of said jury, being accepted and recorded by said court, or the award of the court, if jury trial is waived, shall be final and conclusive, and judgment shall be rendered, and execution issued thereon, and costs shall be recovered by the petitioner if the amount of said judgment exceeds the amount offered him for his damage by the corporation before the filing of said petition ; otherwise the corporation shall receive its costs.

SECTION 4. Such corporation shall proceed to build upon said land suitable buildings for the slaughtering of swine, and for melting and rendering purposes, and all necessary stables and out-buildings. But no buildings shall be erected until the plans thereof, with all details of construction, have been submitted to, and approved by said state board of health, or some person designated by said board to examine said plans. All the business of the corporation shall be carried on in accordance with such regulations as said board shall, from time to time, establish and furnish in writing to the clerk of such corporation, and for each violation of any one of said regulations, the corporation shall be liable to a fine of not less than twenty nor more than five hundred dollars, to be recovered by indictment against said corporation.

Subject to the foregoing provisions, such corporation may manufacture and sell any of the usual products of said slaughtering, and melting and rendering business, or may lease, or permit other persons to use their buildings, or parts thereof, on such terms as may be agreed upon. And each member of

the corporation shall have the right to slaughter on said premises, subject to such regulations and such tariff of prices as the corporation may by vote at any regular meeting, establish, and to the regulations of the said board of health as aforesaid. And any person engaged in slaughtering or other business on the premises of such corporation, who shall violate any of the said regulations of said board, shall be liable to the penalty herein before affixed to violations thereof, by such corporation. [*Approved June 2, 1874.*]



**ON THE COMPOSITION OF THE AIR OF THE
GROUND-ATMOSPHERE.**

By WM. RIPLEY NICHOLS,
**PROFESSOR OF GENERAL CHEMISTRY IN THE MASSACHUSETTS INSTITUTE OF
TECHNOLOGY.**



ON THE COMPOSITION OF THE AIR OF THE GROUND-ATMOSPHERE.

That the atmosphere of invisible gas which surrounds us on every side, and which we call the air, is a ponderable substance; that it exerts a definite pressure upon every surface upon which it rests,—a pressure which may be measured in pounds,—these are facts with which we are familiar from childhood, although we do not ordinarily take cognizance of this substance, except when it is in motion, nor even then, unless it is moving with a velocity greater than one hundred feet per minute.

Less familiar to our minds than the above-mentioned facts, is the consideration that the ground beneath our feet is penetrated to an indefinite depth by the atmosphere; it is a fact which we, of course, know, but which we do not generally recognize.

We observe that water spilled upon the ground soaks into it sooner or later, but when we speak of the porosity of a soil, we are more apt to think of the possibility of filling the pores or interstices of the soil with water than of the fact that, under ordinary circumstances, those pores or interstices are filled with air. In fact, we may determine the relative porosity of different soils by taking vessels of equal size, filling them completely with the soils in question, and then pouring in as much water as the vessel will hold in addition. The water takes the place of air previously confined in the soil, and the volume of air displaced is measured by the volume of water absorbed. Nor is this true simply of sand, gravel and of soils which are recognized as porous; even firm rocks in many cases will absorb a considerable amount of water or, in other words, contain a considerable amount of air. Some varieties of sandstone are thus made up of air to the extent of one-third of their bulk.

If this conception of the presence of air throughout the ground on which we walk is unfamiliar to many, it is far from being generally known that this "ground-atmosphere"* differs in composition from the atmosphere of the air. It is made up of the same gases,—oxygen, nitrogen and carbonic acid,—but the proportion of these gases in the atmosphere beneath our feet is subject to great variation, while in the atmosphere about us it is nearly constant; moreover, the proportion of carbonic acid is considerably greater in the ground-air than in the air of the atmosphere. It is, indeed, only a very short time since investigations into the character of the ground-air were begun, as having possible reference to hygienic questions. Boussingault, to be sure, in 1852, investigated the composition of the atmosphere confined in the upper portion of the ground. His experiments were made, however, on air taken at an average depth of only about fifteen inches, and the matter was considered simply from the stand-point of the agricultural chemist.†

In the year 1854, Pettenkofer,‡ in his investigations on the cholera, called attention to the fact that the air in the ground deserved attention as well as the ground-water. It was not, however, until the year 1870,§ that he began to carry on systematic investigations. These were directed principally to determining the amount of carbonic acid present at various depths. The experiments were conducted in the alluvial gravel of the plain in which Munich is situated, in a locality which had not been subjected to cultivation, and it was found that, as a rule, the amount of carbonic acid was very much greater than in the air of the atmosphere, that the amount of this gas increased with the depth, and that the amount varied with the season, being greatest in summer and least in winter. To illustrate: the largest amount at a depth of 4 meters (13½ feet) below the surface was 18.38 parts in 1,000

* The term "ground-water" as a translation of the German "Grundwasser" has already obtained a foothold in English; there seems to be no reason why "Grundluft" should not be translated "ground-atmosphere" or "ground-air."

† Boussingault et Léwy. *Memoire sur la composition de l'air confiné dans la terre végétale*. [Annales de chimie et de physique, [3], xxxvii (1853), pp. 5-60.]

‡ Hauptbericht über die Cholera, von 1854, in Bayern, p. 377.

§ Max von Pettenkofer. *Ueber den Kohlensäuregehalt der Grundluft im Geröl Boden von München in verschiedenen Tiefen und zu verschiedenen Zeiten*. [Zeitschrift für Biologie, vii. (1871), p. 395.]

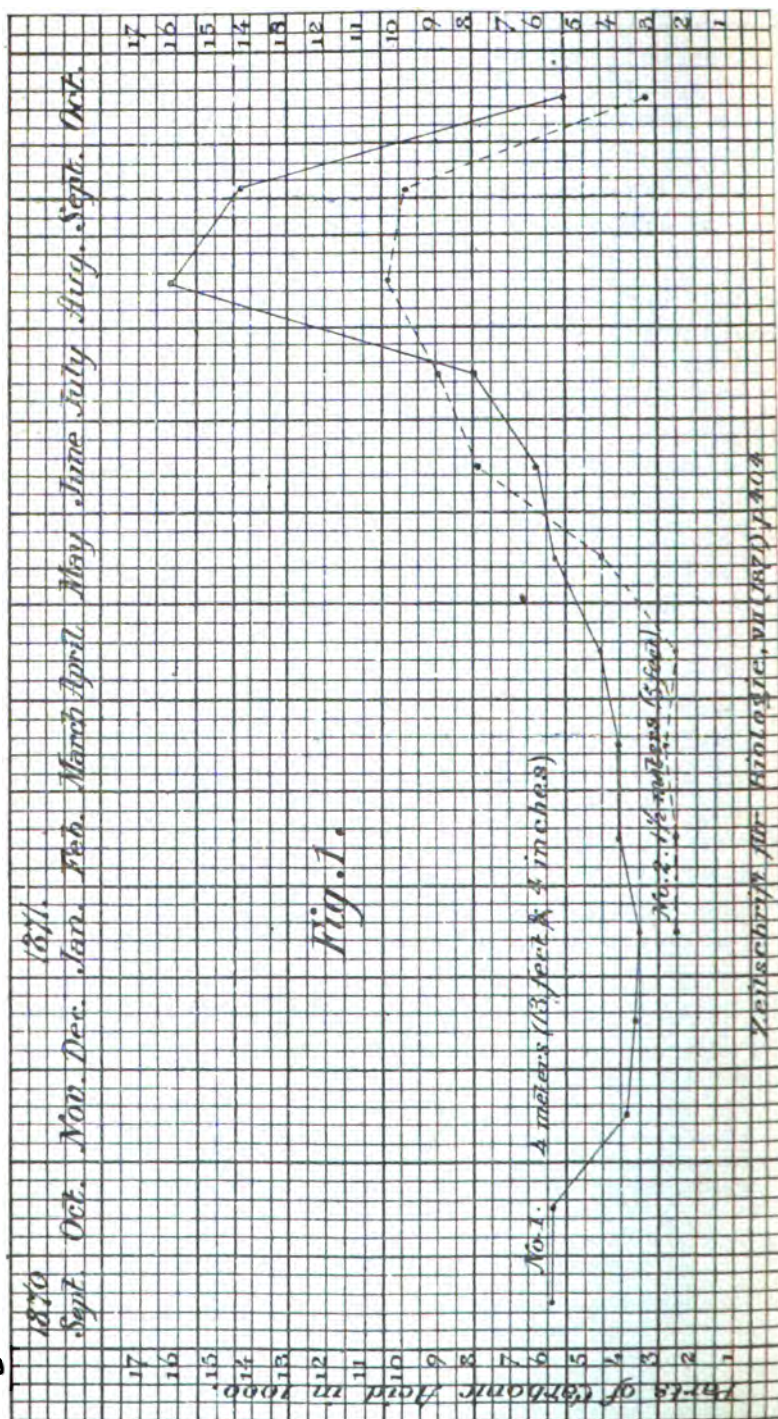
(by volume); this was on August 7. The largest amount at a depth of $1\frac{1}{2}$ meters (5 feet) was 14.15 parts; this was in July 31. The smallest amount at a depth of 4 meters was 3.01, on February 8; at a depth of $1\frac{1}{2}$ meters was 1.58, on February 28.* Since this time frequent determinations have been made in various localities in Munich, under the direction of Pettenkofer, and in Dresden, under the direction of Fleck, and the amount of carbonic acid found has often been much greater than the maximum mentioned above, on one occasion reaching the enormous amount of 80.63 parts in 1,000 (October, 1873).

The first experiments made seemed to indicate much greater regularity in the increase or decrease of carbonic acid, according to depth and season, than subsequent investigation has shown generally to obtain. On the following page (Fig. 1) may be found a graphical representation of the amount of carbonic acid at the depth of 4 meters ($13\frac{1}{3}$ feet) and $1\frac{1}{2}$ meters (5 feet), respectively, as found by Pettenkofer in Munich, from September, 1870, to October, 1871.

The curve is a very striking one, with well-marked periods of maximum and minimum; it is, however, constructed from the monthly averages, taking the mean of all the determinations made during each month. I have constructed, on an enlarged scale (Fig. 2), a curve to show the points fixed by all the determinations made during the months of July and August, 1871; and subsequent investigation has shown—as indeed we should not unnaturally expect—that the character and condition of the soil have much to do with the amount of carbonic acid contained in it. This may be very clearly seen by inspecting the following table,† which contains the results of determinations made in different localities during the year 1873, the depth being 4 meters.

* The amount of carbonic acid in the outer air may be taken as generally lying between 0.30 and 0.45 parts in 1,000.

† Jahresbericht der chem. Centralstelle, Dresden, III. (1874), page 13.



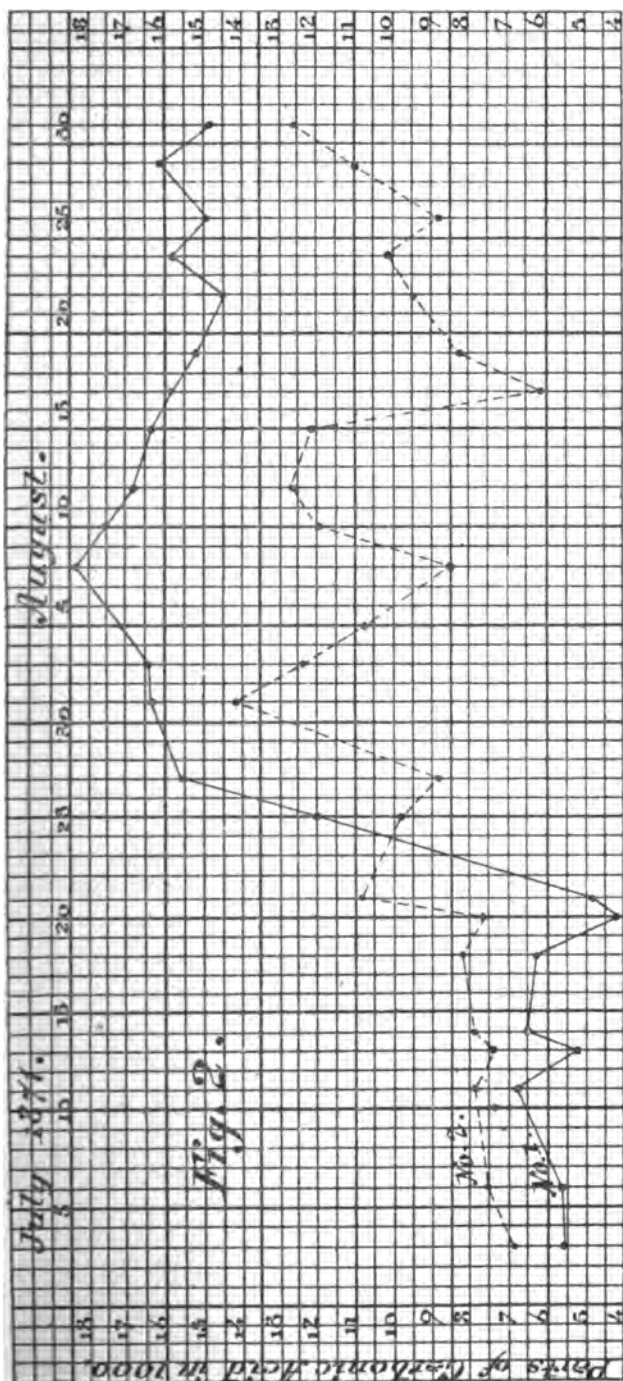


TABLE No. I.

Carbonic Acid expressed in Parts per 1,000 (by volume).

MONTHS.	In gravelly soil, on the left bank of the Elbe, Dresden. —Fieck.	In gravel, Munich. —Pettenkofer.	In sandy soil, on the right bank of the Elbe, Dresden. —Fieck.
January,	46.6	6.8	1.3
February,	36.6	6.8	2.6
March,	42.5	5.1	2.2
April,	39.9	7.7	2.0
May,	44.8	5.5	2.4
June,	48.3	6.8	3.8
July,	42.2	9.5	6.8
August,	56.6	16.0	4.1
September,	58.1	17.4	4.2
October,	60.1	9.3	3.8
November,	53.5	8.5	2.9
December,	47.3	10.1	2.2

In this connection, it may not be out of place to introduce some of Boussingault's results, previously referred to; * the depth being, as a rule, about 15 inches.

TABLE No. II.

Carbonic Acid expressed in Parts per 1,000 (by volume).

No.	Description.	Carbonic Acid.
1 and 2, . . .	Land recently manured,	22.1
8,	" " "	97.4
3 and 15, . . .	Cultivated field,	9.8
5 and 6, . . .	Vineyard,	9.6
11 and 12, . .	Forest of Goersdorff,	8.6
16, 29, 31, . .	Loamy subsoil of same,	8.2
30 and 32, . .	Sandy subsoil of same,	2.4
18 and 25, . .	Cultivated field, not recently manured, . .	7.9
28,	" " recently manured,	15.4
13,	Soil rich in humus,	36.4
17,	Cultivated field,	8.7
21,	" "	8.0
23,	" "	6.6
22,	Prairie,	17.9

* *Annales de Chimie et de Physique* [3], xxxvii. (1853), page 49.

The examination into the character of the gases contained in the soil has now been carried on in various localities in Germany for several years. In his first paper on the subject, quoted above, Pettenkofer says: "I present something imperfect and incomplete,—simply investigations on the amount of carbonic acid in the ground-air; it is, however, a beginning which perhaps will influence others to seek further. The whole problem naturally can find its complete solution only when everything which is present in the soil, either in the state of gas or of fine suspended particles, has been accurately investigated and become well understood." In the second paper * he says: "I think that determinations of the amount of carbonic acid in the ground-air might furnish us, in soil of a given character, with a valuable indication of what is designated indefinitely when we speak of the ground's being 'impregnated'; just as in a room full of people we can judge with reference to the overcrowding of the room by the amount of carbonic acid." Of course, it is difficult to generalize and to make deductions from observed facts until a large number of observations have been made; and it is possible that hereafter some better index of *impurity* than carbonic acid may be found; for the present, however, it seems to be the most readily determined of the constituents of the ground-air, and the results obtained are, in many cases, very striking and interesting.

Last spring, I was requested by Dr. Derby, the then Secretary of the Board of Health, to make a contribution to this subject by examining the air below the surface of ground in the "Back-Bay lands" in Boston. This part of the city is *made land*, having been filled in mainly with gravel from the drift deposits in the neighboring country. This gravel was placed directly upon the mud of the Back Bay, and is of varying thickness. Several preliminary experiments were made, and, finally, a connected series of determinations has been carried on in one locality, near the Institute of Technology.

I. The first experiment was made in the vacant lot to the south of the Institute building. The level of the lot is about

* Zeitschrift für Biologie, IX. (1873), page 257.

12 feet above mean low-water, and the sub-soil water rises to within from $3\frac{1}{2}$ feet to $5\frac{1}{2}$ feet of the surface of the ground; the air could not, therefore, be taken at any considerable depth from the surface. An iron pipe, closed and pointed at the lower end, but furnished with a perforation in the side, was driven into the ground, so that the perforation was $3\frac{1}{2}$ feet below the surface. A glass tube was then placed in the iron pipe so that it reached to the bottom, and clean sand was poured into the iron pipe so as to fill completely the space around the glass tube. The top of the iron pipe was then sealed and the glass tube connected with an aspirator. The air was tested for *sulphuretted hydrogen* by drawing ten liters of the air through a solution of acetate of lead. No sulphuretted hydrogen was detected. Another portion of air, amounting to five liters, was drawn through pure water, and the water subsequently tested for *ammonia*. There was found to be 0.00004 gram of ammonia from the five liters of air. This trial was made May 4; subsequently (on May 15) another experiment was made, with identical results. The following are the details of the carbonic acid determinations:

TABLE No. III.

Air taken three and a half feet below surface.

DATE.	Distance from surface of ground to surface of under-ground water.	Carbonic Acid, parts in 1,000.
May 4, 1874,	3 feet 10 $\frac{1}{2}$ inches, .	1.49
" 7, "	3 " 11 $\frac{1}{2}$ " .	1.53
" 15, "	4 " 0 $\frac{1}{2}$ " .	1.51
" 18, "	4 " 1 $\frac{1}{2}$ " .	2.20
" 22, "	4 " 2 " .	2.26

II. A few determinations were also made at another locality on the "Back-Bay lands"; namely, in the rear of No. 523 Columbus Avenue. Here the filling material was very loose sand. The sand was 10 feet in thickness, and the water stood at from 2 to 3 feet from the surface of the ground. A sample of the hard mud was taken up from a depth of 15 feet below the surface, and, after being dried at the temperature of boiling water, was found to lose 8.6 per cent. on ignition.

Although it possessed some disagreeable odor, no sulphuretted hydrogen could be detected when the mud was distilled with water or with acid. The mud contained ammonia compounds and nitrogenous organic matter. Some of the ground-water was also examined, and gave negative results as far as the sulphuretted hydrogen is concerned. A few examinations were made in this locality of air taken at a depth of 2 feet from the surface. No sulphuretted hydrogen was found in 13½ liters of the air on May 19, and on the same date, 5 liters of air were found to contain somewhat less than 0.00002 gram of ammonia, no more than the outer air.

TABLE NO. IV.

Air taken two feet below surface.

DATE.	Distance from surface of ground to surface of ground-water.	Carbonic Acid, parts in 1,000.
May 22, 1874,	2 feet 7 inches, .	—
" 23, "	2 " 9½ " .	1.75
June 17, "	2 " 10½ " .	3.56
" 25, "	— —	3.13
July 25, "	3 feet, .	4.77
Sept. 16, "	2 " 2½ inches, .	0.71

III. A somewhat extended series of determinations has been made at another locality, where the depth of gravel is greater; namely, between the Natural History Society's Museum and the building of the Massachusetts Institute of Technology. In this space, the land has been filled in to a level with the street, and the gravel is covered with about a foot of loam; the surface of the lot is about 19 feet above mean low water. This portion of the Back Bay was filled in 1860-61. The distance from the surface of the ground to the beginning of the mud was found to be 19 feet, and a portion of the mud was brought up for examination. It was found (after being dried at 212° F.) to lose 4 per cent. on ignition, and consisted mainly of sand, containing some fragments of shells. It contained traces of ammonia and some nitrogenous organic matter, but no sulphuretted hydrogen or sulphides. Air was drawn through a glass tube from a

depth of 10 feet, and was found to contain some ammonia, but no sulphuretted hydrogen. Two pipes were sunk in the manner described, so as to draw the air from a depth of 6 and 10 feet, respectively; and for the tubes connected with the aspirators, small lead pipes were used. The air was drawn through chloride of calcium to remove moisture, and then through weighed bulbs containing caustic potash solution in which the carbonic acid was absorbed. The amount of air used was 7 liters, except where the quantity of carbonic acid was very small.

The results of the examination are embodied in the table on following page. The analytical determinations recorded here and in the two previous tables, were made by Miss Ellen H. Swallow, A. M., in the laboratory of the Massachusetts Institute of Technology.

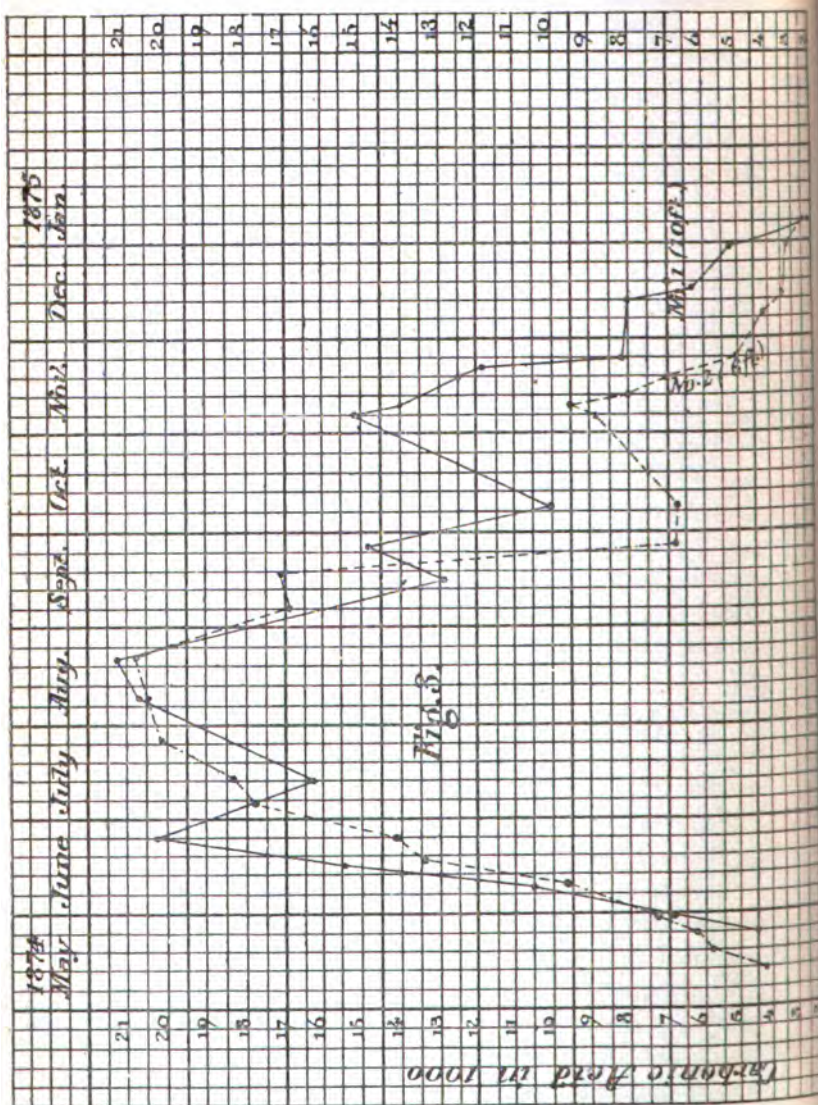
The results expressed in figures in Table V. are expressed as a curve in Fig. 3 (page 218). It appears that there was very little difference in the amount of carbonic acid at the different depths for a considerable portion of the time during which examinations were made; but in October, November and December, the amount of carbonic acid has been sensibly greater at a depth of 10 feet from the surface than at a depth of 6 feet. The results are very similar to those obtained by Pettenkofer in the gravel at Munich.

The question naturally arises, What is the source of this carbonic acid? The carbonic acid in the upper portion of a soil rich in humus is readily explained, it being due to the oxidation of the humus, and as the carbonic acid increases the oxygen decreases, as was shown by Boussingault, who found the sum of the oxygen and carbonic acid to be nearly constant. Moreover, that a large amount of carbonic acid should be found at moderate depths in the soil of the botanical garden at Dresden, which has been highly cultivated, and which is heavily manured twice a year, is not a matter of surprise, but that so much should be found at the station at Munich, which is situated on a mixture of limestone-gravel and sand, and that a not inconsiderable amount should be found in the sand on the right bank of the Elbe, at Dresden, was hardly to be expected, on account of the very small amount of organic matter present. Boussingault examined

TABLE No. V.

Carbonic Acid expressed in Parts per 1,000.

DATE.	Amount of Carbonic Acid at a depth of		Distance from surface of ground to surface of ground-water.	Remarks.
	10 feet.	6 feet.		
1874.				
May 5,	-	-	10 ft 3 in.	The height of the ground-water was measured at a point some 150 feet distant from the point at which the air was taken. It is, however, sufficiently exact for the present purpose, as there is probably little difference in the height at the two points.
8,	-	-	10 " 6 "	
11,	-	-	10 " 9 "	
12,	-	4.17	More than 10 ft. 9 in.	
13,	-	4.20		
14,	-	4.01		
16,	-	5.21		
18,	-	5.98	Air of 10-foot pipe tested for sulphuretted hydrogen with negative results.	
21,	4.31	6.40		.
22,	4.74	6.33	10 ft. 8 in.	A heavy rain May 26.
27,	6.88	7.24	10 " 8 "	
June 9,	10.50	9.64	More than 10 ft. 9 in.	Dry weather. Heavy rain July 12.
17,	15.50	13.40		
25,	20.26	14.20		
July 4,	-	17.59	10 ft. 9 in.	Air of 10-foot pipe tested for sulphuretted hydrogen with negative results.
13,	16.37	18.37		
25,	20.26	20.20		
Aug. 10,	20.60	-	10 ft. 8½ in.	Snow and rain the night previous. Very windy.
20,	21.21	20.71	-	
Sept. 5,	-	16.97	-	
15,	12.85	17.07	-	Rain December 7. Rainy.
26,	14.73	6.98	-	
Oct. 6,	10.00	6.74	-	
Nov. 5,	-	8.95	-	Very cold. Very cold.
6,	15.32	9.52	11 ft. 10 in.	
10,	15.31	9.19	11 " 10 "	
14,	13.13	7.07	12 " 0 "	A light snow or sleet fell January 2, and covered the surface of the ground with a continuous icy coating which had not melted January 5.
18,	12.59	6.88	11 " 11 "	
21,	11.72	5.89	11 " 11 "	
23,	-	4.33	11 " 11 "	Rainy.
24,	8.08	-	11 " 9 "	
Dec. 8,	8.06	4.11	11 " 10 "	
14,	7.92	3.49	-	Very cold. Very cold.
15,	6.39	3.28	11 " 11 "	
29,	5.10	3.23	11 " 11 "	
1875.				
Jan. 5,	2.12	2.45	12 " ½ "	



the air in one or two instances at a depth of a meter and a half (five feet), and inferred that the carbonic acid thus found was formed in the upper portions of the soil by the decay of vegetable matter and carried down by the rain. It is well known that the ground-water contains more carbonic acid and less oxygen than ordinary pond or river water,* and it was not unnatural that the question should arise, whether the carbonic acid at the lower depths might not come from the ground-water. Pettenkofer has, however, disproved this idea, and shown that the carbonic acid of the ground-water is, on the contrary, derived from the ground-atmosphere, or rather that both are to be ascribed to the same source; namely, to organic processes taking place in the ground. In these observations and views he is supported by Fleck, in Dresden, who finds that, as in the soil above, with increase of carbonic acid, there is a corresponding decrease of oxygen, so that these organic processes are processes not of putrefactive decay or of fermentation, but of oxidation. It is to be borne in mind that the atmosphere in the ground is not in a state of rest, but that differences between the temperature of the ground and of the air cause currents of air, and produce effects like those of ventilation; moreover, although carbonic acid is much heavier than air, yet by virtue of the power of diffusion† possessed by all gases, it is passing all the time up through the soil into the outer air, and that if the organic processes concerned in its formation were to cease, the amount in the ground would soon decrease, until the amount in the air about us, and in the atmosphere beneath our feet, would be uniform. We might, at first thought, be inclined to suppose that such a condition of things did obtain in winter, when we see the amount of carbonic acid so much less in winter than in summer, as it was found to be by Pettenkofer in the Munich gravel, and as we have found it in the made land of the Back Bay. It would, no doubt, be true of the upper layer of soil which is reached by the frost, that the organic processes go on with extreme slowness, if at all, in winter, but in the lower strata the temperature is subject to

* See, for instance, the Fifth Annual Report of the Massachusetts State Board of Health, page 138 (compare Nos. 207 and 205).

† See Appendix B (page 224) for an illustration of this power of diffusion.

much less variation, and never falls much lower than 40° F. The variations, then, in any locality seem to depend, in very considerable measure, on varying facility for diffusion, and the diffusion seems to be greater when the temperature of the atmosphere falls below that of the ground.

It is to be borne in mind that the amount of carbonic acid found at any time, is the difference between the amount actually produced and the amount carried off by diffusion and by the ground-water. The amount, then, that is found in different soils, and under differing conditions, cannot be taken as a measure of the intensity of the processes concerned in its production, for very much depends on the character of the soil, especially in the matter of porosity. At present it does not seem to be possible to draw much useful information from the determination of the carbonic acid in the ground-air. As the number of the determinations increase, and the laws of the variation are better understood, it is possible that, like the height of the ground-water, it may be found to connect itself with causes and effects of sanitary importance.

With reference to the examinations made of the ground-air in the "Back-Bay lands," it may be a matter of surprise to some that the air was not found worse; certainly the popular mind is apt to consider the layer of mud as a fruitful source of sulphuretted hydrogen and other foul and offensive gases. It is possible that some localities might be found where the condition of things is worse than in the places examined; but wherever the mud is properly covered, it is not probable that any offensive gases *can pass through the gravel*, and where the mud is covered constantly with water, the decomposition of the organic matter takes place with extreme slowness. It is possible that some of the carbonic acid found in the gravel on the Back Bay may have come from the slowly proceeding decomposition of the mud underneath.

Some interesting experiments have recently been performed by Professor Fleck, in Dresden, on the influence of decomposing matter on the air of the adjacent soil; an abstract of his results is appended to this paper.

The rapidity with which even a heavy gas like carbonic acid *diffuses* is so apt to fail of being recognized, that it may not be felt useless to append also an abstract of some experiments of Pettenkofer on this subject.

APPENDIX A.

THE AIR IN THE SOIL ABOVE DECOMPOSING BODIES.

In his researches on the effects of the cemeteries on the well-waters of Dresden, Professor Fleck made some interesting experiments on the effect of decomposing dead bodies on the air of the ground in their neighborhood.

A pit was dug two meters ($6\frac{3}{4}$ feet) deep, and in it were placed, side by side, in a vertical position, four earthen tubes, two meters long and 0.25 meter (10 inches) wide, and the earth was filled in again about them. The tubes were partially filled with different materials corresponding to different varieties of soil; a dead rabbit, weighing in each case about five pounds, was then put in, and the remainder of the tube filled with the same materials.

Two rabbits were thus buried in clay (Nos. I. and II.), one in fine sand (No. III.), and one in clean gravel which had been screened to a uniform size (No. IV.). Arrangements were made, so that by means of small lead pipes air could be drawn from these artificial graves immediately above the dead body and also at a distance of 1.1 meters (43 inches) above the body; that is, about twenty inches below the surface of the ground. Two of the graves were arranged so that the rain-water and the melted snow passing through the soil and over the body could be collected beneath in iron pots, and be withdrawn for examination by means of small tubes.

In filling these experimental graves, the conditions were made to resemble as nearly as possible those which obtain in actual graves, and as the soil (especially in the case of the clay) sank together, more was thrown in on top.

The experiments were begun October 7, 1873, at which date the amount of carbonic acid in the ground-air was determined, and after an interval of two weeks regular determinations were made.

The results obtained were as follows :—

TABLE NO. VI.

Carbonic Acid expressed in Parts per 1,000.

DATE.	No. I (CLAY).		No. II (CLAY).		No. III (SAND).		No. IV (GRAVEL).	
	a—Above the body.	b—20 inches from surface.	a—Above the body.	b—20 inches from surface.	a—Above the body.	b—20 inches from surface.	a—Above the body.	b—20 inches from surface.
1873.								
Oct. 7,	3.07	2.23	8.54	1.00	3.38	0.90	10.46	1.00
21,	50.57	38.08	83.09	19.45	50.61	12.13	37.12	4.15
28,	82.91	36.26	53.27	20.61	43.59	6.85	34.90	3.35
Nov. 5,	84.40	43.13	62.90	13.85	37.33	5.39	42.88	5.33
12,	80.13	35.23	57.78	9.29	27.85	1.78	19.11	3.50
13,	144.00	37.40	105.10	27.80	52.80	4.80	55.70	9.60
25,	127.70	23.00	101.80	10.60	25.90	3.40	30.70	5.30
Dec. 2,	121.00	43.20	99.80	4.80	60.30	9.60	36.50	5.80
10,	119.00	44.20	89.30	2.40	49.90	5.30	21.10	3.20
16,	109.40	47.00	94.00	4.80	49.90	—	36.00	—
23,	121.90	49.90	100.80	6.20	28.80	3.80	32.60	—
30,	140.20	57.60	103.70	8.60	14.40	1.00	26.90	1.00
1874.								
Jan. 7,	75.13	36.96	56.03	12.19	23.86	4.82	9.19	6.40
Feb. 3,	—	6.83	—	4.40	18.79	3.54	13.44	10.62
10,	—	5.24	—	1.81	32.38	7.20	18.57	5.63
17,	—	4.98	—	2.13	32.36	0.71	3.25	0.52
24,	—	7.26	—	4.37	49.09	9.62	11.78	2.32

During a certain length of time, determinations of oxygen as well as of carbonic acid were made, and the amount found showed, beyond question, that as long as there was opportunity for the diffusion of atmospheric air into the graves, the decomposition of the organic matter is mainly a process of oxidation.

The table given above shows a very different state of things in the different graves, and, shows too, how great an influence the character of the soil has upon the composition of the ground-air. It is, moreover, well known that dead bodies require about twice as long a time in clay as in sand for their complete decomposition. Hence it is evident that the amount of carbonic acid cannot be taken as a measure of the intensity of the processes of decay which are going on in soil.

The blanks in columns one and three of the table are owing to the fact that after February 3, the clay had become so compacted that the bodies which were buried in the clay were hermetically sealed, so that the air of the atmosphere had no access to them.

With regard to gases other than carbonic acid arising from the decay of the organic material, the amount was found to be very small. Traces only of sulphuretted hydrogen were found, and the amount of ammonia was very trifling, never more than 0.0026 part by volume in 1,000 parts of the air. After removal of the carbonic acid and ammonia, the gas still possessed a peculiar odor, pointing to the presence of other gaseous compounds which are now in process of investigation.

The rain-water which filtered through the ground and passed over the dead bodies was collected beneath them and examined. This water was found to contain a large amount of nitrogen, chiefly in the form of the compound ammonias (amines); the water also contained lactic acid and some of the lower members of the fat-acid series.

Arrangements had been made so that portions of the decomposing bodies could be withdrawn from time to time. The bodies were found to possess a herring-like odor and to be covered with a soapy coating consisting in the main of protein substances in the process of decomposition, and containing compound ammonias and fat acids (or rather the salts formed by their combination). Simply pouring caustic potash on the mass sufficed to show the presence of trimethyl-amin, and other tests showed the presence of some mon-amin; and as solutions containing these bodies pass into the ground-water, the effect thus produced is likely to be of more importance than any gaseous emanations from the ground. [*Jahresbericht der chemischen Centralstelle für öffentliche Gesundheitspflege in Dresden*, III. 1874, pp. 37-44.]

APPENDIX B.

RAPID DIFFUSION OF CARBONIC ACID.

In a paper published in the "Zeitschrift für Biologie," for 1873, Pettenkofer alludes to a popular idea which, in spite of theoretical and direct evidence to the contrary, still has currency; namely, that in a badly-ventilated room the worst air collects at the bottom, on account of the high specific gravity of carbonic acid. He then gives the details of some experiments which illustrate in a remarkable manner the very great rapidity with which a heavy gas diffuses into another gas with which it is in contact, even when the heavier gas is situated below the lighter.

These experiments were performed at a mineral spring at Marienbad, where there is a constant evolution of carbonic acid from the surface of the basin in which the water is confined. This basin is quite large, and is used for bathing; it is covered by a light wooden building, and the evolution of carbonic acid is very considerable. It is estimated that, if no diffusion took place, at the end of an hour the building would contain over the surface of the water a layer of carbonic acid 12 feet in thickness.

Pettenkofer found the gas escaping from the water contained 70 per cent. of carbonic acid; the air 3 inches above the surface contained 31 per cent. of carbonic acid; the air 10 inches above the surface contained 23 per cent. of carbonic acid; the air 40 inches above the surface contained 2 per cent. of carbonic acid; the air 55 inches above the surface contained less than $\frac{1}{2}$ per cent. of carbonic acid.

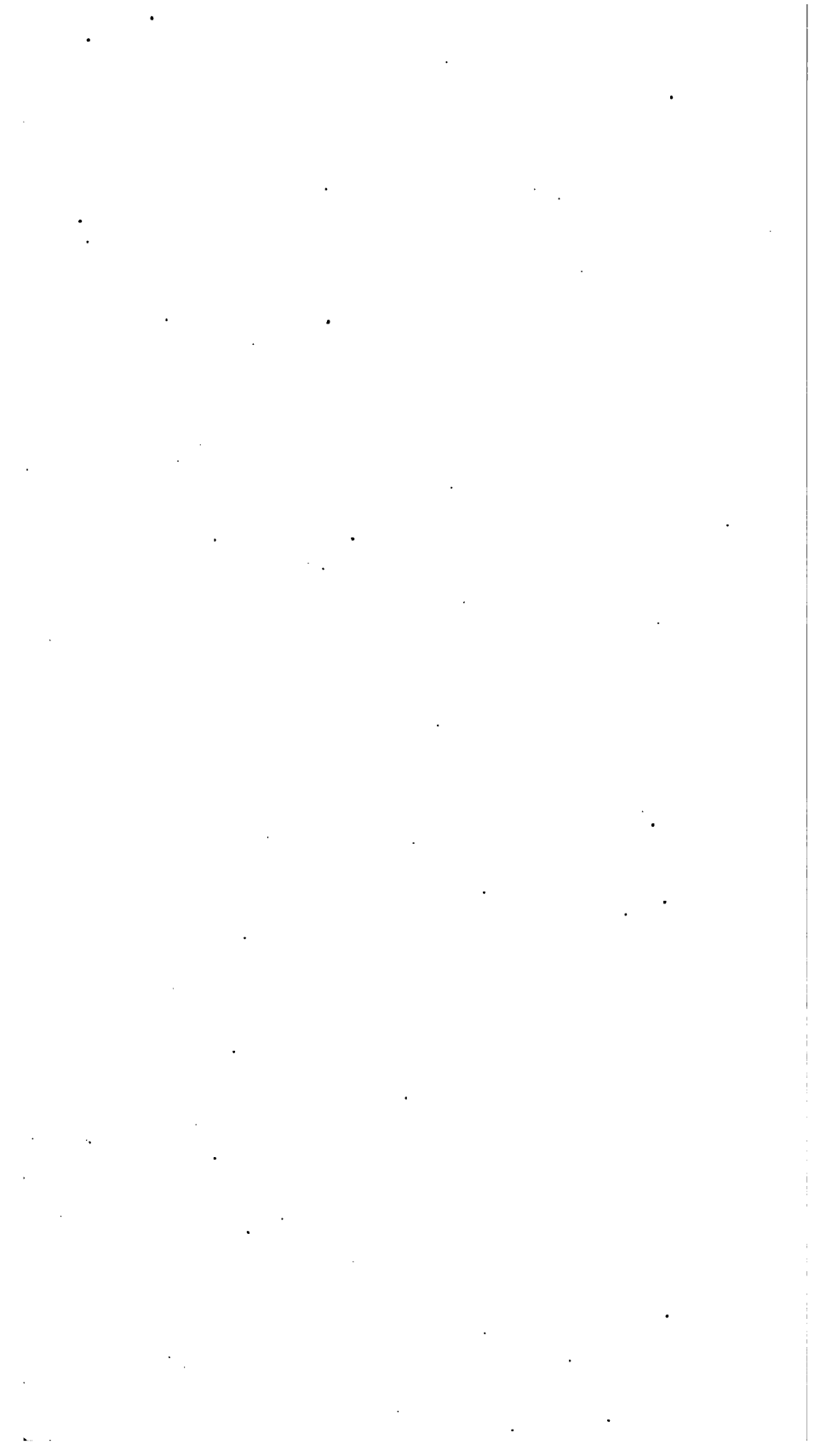
As the carbonic acid is evolved continually, we see how rapidly it diffuses into the atmosphere, or how rapidly the gases of the air diffuse into the carbonic acid layer, so that, at a height of 40 inches above the surface of the water, the carbonic acid amounts to only about 2 per cent. of the volume of the air, and this, too, in a space inclosed by a structure built of boards, and not freely open to the air.

VENTILATION OF RAILROAD CARS.

By THEO. W. FISHER, M. D.
(Of Boston.)

WITH CHEMICAL ANALYSES,

By WM. RIPLEY NICHOLS,
PROFESSOR OF GENERAL CHEMISTRY IN THE MASSACHUSETTS INSTITUTE
OF TECHNOLOGY.



VENTILATION OF RAILROAD CARS.

The object of this paper is briefly to call public attention to the insanitary condition of the passenger-cars on our railroads, and to introduce some tests and experiments on the air in smoking and other cars made by Prof. W. R. Nichols, of the Massachusetts Institute of Technology, at the request of the State Board of Health.

This subject of car-ventilation may seem trivial when we consider the brief period of occupancy in individual cases, but even in this point of view, it is of some importance; and to that quite large class of persons who spend several hours daily in the cars, it is of the most vital interest. The American people are eminently a travelling public, and the aggregate of time spent in this way is worth considering. Massachusetts, according to the Railroad Commissioners' Report for 1873, has 1,735 miles of railroad, or about one mile to every 879 inhabitants, and to every four square miles of territory. The number of passengers carried annually is over forty-two millions. These facts show the importance of making all public conveyances equal, at least, in their hygienic condition, to our school-houses and other public buildings.

That this is not the case, the travelling public has daily sensible demonstration. Universally defective methods of heating and ventilation of steam-cars lead to bad air, oppressed breathing, hot, heavy and aching heads, cold feet, coughs and debility, to say nothing of the discomforts of heat, dust and bad odors in summer. To these are added the deleterious effects of the concentrated fumes of tobacco, when the traveller is driven for a seat to the smoking-car.

A striking illustration of how bad the condition of things

may become, is found in a monograph, by the Baron N. de Derschau, a Russian engineer, upon Heating and Ventilation of Railway Cars (Paris, 1871). An experiment was made on an American car, running as third-class between St. Petersburg and Moscow, during the winter of 1866. The car was 50 feet long, and carried 80 passengers. The outside temperature at starting was 22° F. below zero, the inside 16° below, and there was no means of heating. Observations were made hourly, with the following result: The temperature rose from the accumulation of animal heat until, at the end of nine hours, it was, in the upper part of the car, 21° above zero, while on the floor it was still 6° below. The carbonic acid increased to alarming proportions; viz., from .140 per cent. at starting to .940 per cent. the last hour! The hygrometer, as well as the frost on the windows and the fog in the air, showed that the saturation point for moisture had been reached. The experimenter left the car at the ninth hour physically unable to continue his tests.

This was, of course, an extreme example of what exists in a less degree in every ill-ventilated car. In cold and rainy, or in hot and dusty weather, the opening of windows is impracticable, and passengers suffer the insidious effects of bad air in avoiding the more obvious dangers from dust and draughts. The opening of doors at stations affords but little relief, since the cars are not then in motion so as to create a thorough draught.

The smoking-car is a purely American institution. In England and France, smoking is forbidden in the first and second class carriages, but is connived at by the guards, on the payment of a small fee, if no one in the compartment objects. In Germany, smoking is so universal that a contrary custom prevails, and smoking is allowed everywhere, except in certain compartments marked "*Für nicht Raucher*" (no smoking), where tourists and ladies may avoid the fumes of pipe and cigar, if they wish. Our custom is to collect all smokers into one car, thus concentrating the products of burning tobacco, which might otherwise be diffused through the whole train.

The bad hygienic condition of these moving fumatories must be more or less familiar to all. The fact that the air is

irrespirable by most non-smokers, including the whole female sex, is sufficient to show this without the aid of chemical tests, which often fail to detect subtle atmospheric qualities, which may be evident to the senses, and fruitful sources of disease and death. Exceptional mischief of a serious kind has recently served to direct attention to the above fact; a young man having been killed by falling from the platform of a moving train, in consequence, it was supposed, of the dizziness produced by a brief stay in the smoking-car.

The following experiments of Prof. Nichols will furnish approximate evidence of the purity of the air in cars, under various circumstances, by showing the amount of carbonic acid present. This gas is irrespirable, except in the smallest quantities, and is generally accepted as a fair standard of the amount of other impurities given off by the skin and lungs, which tend by their immediate putrefaction to produce directly poisonous effects upon the human system.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, }
Boston, December 12, 1874. }

DEAR SIR:—Having been requested by Dr. Folsom, Secretary of the State Board of Health, to make some investigations into the character of the air in smoking-cars, I beg leave to report herewith the results of such determinations as have been made.

Every one recognizes the "closeness" of the air on entering, at this season of the year, an ordinary passenger-car which is moderately full. We are not able to determine exactly the substances in the air which cause this feeling and which produce the injurious effects experienced by remaining for a considerable length of time in ill-ventilated or overcrowded apartments. As, however, the exhalations and emanations causing the injurious effects are always composed in part of, or attended by, *carbonic acid*, and as the amount of this compound can be estimated with great exactness, it is usual to take the carbonic acid as affording an indication of the completeness or deficiency of the ventilation.

In the case of smoking-cars, in addition to the exhalations and emanations from the passengers, the products of the tobacco consumed mix with the air and render it oppressive

to most non-smokers. The products of the combustion of tobacco, if the combustion were complete, would be carbonic acid, ammonia and water; in the process of smoking, however, most of the tobacco is distilled rather than burned, and the products of this distillation are quite numerous and complex. The most complete investigation into the composition of tobacco-smoke with which I am acquainted, was made by Vohl and Eulenburg.* They smoked artificially a considerable quantity of tobacco and claim to have recognized with distinctness in the smoke, cyanhydric acid, sulphuretted hydrogen; certain acids of the fatty acid series,—namely, formic, acetic, propionic, butyric and valerianic; also, carbonic acid and creasote; also, pyridin, picolin, collidin and other similar alkaloids, but no nicotin. They found also, in the smoke, ammonia, nitrogen and oxygen, and small quantities of marsh-gas and carbonic oxide.

I have made several attempts to obtain evidence, by chemical means, of the presence in the air of smoking-cars of some of the characteristic products of the smoking of tobacco, but without success. On one occasion I rode from Worcester to Boston, drawing a portion of the air of the car through proper absorbing media. The train was express, and the car was completely filled, and the smokers were about in the usual proportion,—perhaps one-half of the passengers were smoking. Of the peculiar components of the tobacco-smoke, it seemed to me that the fatty acids, so called, butyric, valerianic and acetic acids, would be bodies to be tested for with the greatest hope of success, but I tested also for the alkaloid bodies, which probably form the most injurious portions of the smoke. On this occasion 10 liters (2½ gallons) of air were drawn through the absorbing liquid, but the results were negative. On another occasion 30 liters of air were employed, and on several other occasions quantities lying between these two; in no case was I successful in separating and identifying any of these peculiar products. This, however, is not a matter of great surprise. Vohl and Eulenburg, in the experiments mentioned above, appear to have determined the character of the acid products by consuming 50 cigars, and the alkaline products by the consumption of 100

* Archiv der Pharmacie, [2] 147 (1871,) p. 130.

more. The statement is not, however, quite clear,* and the *amount* of any substance obtained is not given. The whole of the products of the distillation (except the permanent gases) were condensed by them or absorbed in appropriate liquids; in the actual process of smoking, a considerable quantity of these substances are absorbed by the smoker, and what does escape into the air is so diffused, even in a poorly ventilated car, that it would be necessary to use a very large amount of air in order to discover the peculiar bodies of tobacco-smoke, and even then the amount, except by the use of cars-full of air, would be too small to estimate quantitatively. A very little tobacco-smoke does indeed affect the eyes and throat of a person unaccustomed to its use, but our senses are often affected by quantities too small to weigh, too small even to detect by chemical means.

The question, then, from a chemical point of view, seemed to resolve itself into a question of ventilation, and a number of experiments were made to determine the amount of carbonic acid in the air of the cars. The results of these experiments are embodied in the following table.

The following experiments were made to see whether there was an increase of carbonic acid during the trip:—

*The process of separating the alkaloids required several fractional distillations and recrystallizations of the platinum compounds into which they were converted. The authors detail the separation, the identification by physical properties, the determination of the boiling-point, the elementary analysis, and the analysis of the platinum compounds in each case. It seems hardly possible that so small an amount of tobacco as indicated above, could have furnished the material for reliable determinations, and it is possible that some error may have crept into the statement of the amount.

TABLE NO. 1.—*Smoking-Cars.*

No.	Date.	Carbonic Acid in volumes, per cent.	RAILROAD.	Description of Train.	Sample taken between—
1	Nov. 4.	0.293	Providence,	} Dedham train reaching Boston at 7.35 A. M., .	Roxbury and Boston.
2	4.	0.261	"		"
3	4.	0.173	"	} Same train as Nos. 1 and 2; different car, not so full.	"
4	7.	0.335	"		"
5	18.	0.283	"	} Dedham train reaching Boston at 7.18 A. M., .	"
6	23.	0.253	"		"
7	24.	0.171	"	} Stoughton train reaching Boston at 8.10 A. M., .	"
8	27.	0.242	Fitchburg,		"
9	27.	0.140	"	} Watertown Branch train leaving Boston at 5.55 P. M., .	Boston and Cambridge.
10	Dec. 3.	0.369	Providence,		Cambridge and Mt. Auburn.
11	3.	0.317	"	} Dedham train, due in Boston at 7.35 A. M., .	Boylston and Boston.
12	4.	0.098	Eastern,		"
13	4.	0.127	"	} Train leaving Boston at 5 P. M., .	Boston and Lynn.
14	9.	0.234	Fitchburg,		Lynn and Boston.
15	9.	0.179	"	} Same train as Nos. 8 and 9, .	Boston and Cambridge.
					Cambridge and Mt. Auburn.

NOTE.—The method employed for estimating the carbonic acid, was that known as Pettenkofer's, and the air was taken at the height of the heads of the seated passengers.

The following determinations were made in ordinary passenger-cars:—

TABLE No. 2.—*Passenger-Cars.*

No.	Date.	Carbonic Acid in volume, per cent.	RAILROAD.	Description of Train.	Samples taken between—
16	Nov. 13,	0.367	Providence,	} Stoughton train reaching Boston at 8.10 A. M., . {	Jamaica Plain and Boston.
17	24,	0.298	"		" " "
18	Dec. 3,	0.174	"	Dedham train reaching Boston at 7.18 A. M., .	Boylston and Boston.
19	3,	0.174	"	Stoughton train reaching Boston at 8.10 A. M., .	" "
20	8,	0.159	"	} Dedham train reaching Boston at 7.35 A. M., samples { taken in different cars,	" "
21	8,	0.219	"		" "

NOTE.—The trains mentioned in Tables No. 1 and No. 2, were all local, and the greatest distance passed over, before the sample was taken, was about fourteen miles.

The air in the smoking-car of the Stonington steamboat train, on the Boston and Providence Railroad, was examined at intervals during the journey from Boston to Providence, Friday, December 11, 1874. The train left Boston at 5.30 P.M., reaching Providence at 7.05 P.M. The capacity of the car was about 2,750 cubic feet net. The number of passengers was thirty-seven, of whom eighteen were smoking. This was about the average during the trip.

No.	Carbonic Acid volume, per cent.	TIME.	Length of Time.	After leaving—
1	0.172	5.35 P. M.,	5 minutes,	Boston.
2	0.158	5.50 "	20 "	Boston.
3	0.153	6.05 "	35 "	Boston.
	—	6.10 "	*	—
4	0.194	6.15 "	5 "	Sharon.
	—	6.22 "	†	—
5	0.165	6.35 "	12 "	Mansfield.
	—	6.38 "	‡	—
6	0.177	6.45 "	7 "	Attleborough.

* Train stopped at Sharon.

† Train stopped at Mansfield.

‡ Train stopped at Attleborough.

A somewhat similar experiment (but less extended) was made December 9, 1874, on the Watertown branch of the Fitchburg Railroad. The capacity of the car (after deducting the space actually occupied by the passengers) was about 2,350 cubic feet.

No.	Carbonic Acid volume, per cent.	Number of Passengers.	Number Smoking.	TIME.	Train—
	—	—	—	5.55 P. M.	Left Boston.
	—	—	—	5.58 "	Left Charlestown.
1	0.234	44	15	6.05 "	— —
	—	—	—	6.07 "	Stopped at Cambridge.
2	0.179	34	8	6.10 "	— —
	—	—	—	6.13 "	Stopped at Mt. Auburn.

On several occasions, I made comparative tests for the ammonia present in smoking-cars and passenger-cars. The amounts in the following table are *comparative*, simply.

1.		Outer air, Back Bay, average,	100
2. Nov.	13.	Providence Railroad smoking-car,	575
3. Dec.	4.	Eastern Railroad smoking-car,	810
4.	" 4.	" " " " after stopping at a station,	266
5.	" 11.	Providence Railroad steamboat train, taken at same time as carbonic acid (No. 3) of same date,	400
6.	" 11.	Ditto. Taken at same time as carbonic acid (No. 6) of same date,	340
7.	" 8.	Providence Railroad, common car,	135
8.	" 8..	" " another "	175

I may remark, that more of the samples have been taken on the Providence Railroad than on any other, simply because it was more convenient of access.

Yours very respectfully,

WM. RIPLEY NICHOLS.

Dr. T. W. FISHER.

The first fact noticeable in Prof. Nichols' report is, that the amount of carbonic acid found in cars exceeds considerably the average for public buildings, and is, of course, largely in excess of what would be found in the dwellings of the better classes, or in the open air. In the Report of the State Board of Health, for 1871, an article, by the late Dr. Derby, on "Air, and some of its Impurities," gives the average per cent. for the outer air in this vicinity as .035, and for school-houses as about .140. The Music Hall is set down at .140 after a concert; Municipal Court-room, .120; Globe Theatre, .144; Waiting-room of Public Library, from .136 to .193, etc.

The average of Table No. 1 gives the percentage for smoking-cars at .228, the lowest example being .127, and the highest .369. The average of Table No. 2 gives for passenger-cars a percentage of .232; lowest, .174; highest, .367. The air on the Stonington steamboat-train smoking-car was exceptionally pure, the average being .170. The car was by no means full, and but half were smoking. The smoking-

cars of the New York express trains, on the Boston & Albany Railroad, would, perhaps, furnish more marked results. These cars will accommodate 70 passengers, and, according to Mr. F. D. Adams, of that road, are usually filled with smokers, who play euchre from Boston to New York, in an atmosphere of dense smoke. The ordinary ventilators are of no use in clearing the car, and wickets in the ends are required to make any impression on it.

The tables show also a second fact; viz., that the additional amount of carbonic acid produced by the combustion of a few ounces of tobacco is hardly appreciable. Prof. Nichols estimates that if all the carbon of the tobacco were completely burned to carbonic acid, the carbonic acid formed might amount in weight, at a maximum, to one-quarter more than the amount of tobacco consumed. In actual practice, however, much of the carbon is not burned to carbonic acid, but some is given off in the state of carbonic oxide, and more, probably, in the form of compounds of carbon and hydrogen in matters of the nature of tar. The carbonic acid from this source would not indicate, however, any additional impurities from the lungs and skin, and it may be disregarded. A newspaper paragraph is authority for the statement, that Dr. Otto Krause, of Annaberg, Saxony, has found nine per cent. of carbonic oxide in tobacco-smoke; but this seems a large amount.

Let us examine, then, this question of ventilation in another way. The average capacity of a passenger-car is about 2,500 cubic feet of net air-space, excluding that occupied by passengers and furniture. A smoking-car, as arranged with tables, chairs and sofas will accommodate at least 50, and an ordinary car 75 passengers. This gives, in the first case 50, and in the last $33\frac{1}{3}$ cubic feet of air-space to each passenger. The amount of air-space and of air per hour to insure proper ventilation has been variously estimated. Army regulations for hospitals and barracks require from 1,000 to 1,500 cubic feet of air, changed hourly, per soldier. The British Royal Commissioners, appointed in 1857, recommend 600 cubic feet of air-space, and 20 feet of air per minute and per man. Ten feet per minute is the lowest estimate suggested in any case. Take 15 feet per

minute, then, as an average, and the air in smoking-cars should be changed thoroughly at least every four minutes, and in ordinary cars every three minutes, to insure proper ventilation. It is evident this is never accomplished.

It may be useful to insert here a table from a standard French work, by Gen. Morin, on "Heating and Ventilation" (Paris, 1874). I have reduced the metres to feet for convenience' sake.

Volume of air necessary to introduce and withdraw hourly for each person, to insure good ventilation.

		Cubic feet.
Hospitals,	{ Ordinary sickness,	2,100-2,450
	{ Surgical and lying-in,	3,500
	{ Epidemic,	5,250
Prisons, .		1,750
Workshops,	{ Ordinary,	2,100
	{ Unhealthy,	3,500
Barracks,	{ By day,	1,050
	{ By night,	1,750
Theatres,		1,400
Public halls,		2,100
Lecture rooms,		1,050
Schools, .	{ Infant,	420-525
	{ Adult,	875-1,050
Stables, .		6,300

These figures, Gen. Morin states, are based on direct observation, and are not in the least exaggerated. The point at which all sensible odor from effete animal matter disappears is taken as the limit of satisfactory ventilation. This limit is not usually reached while more than .06 per cent. of carbonic acid remains.

Dr. R. Angus Smith says, in his "Air and Rain," a work of undoubted authority: "We cannot accept a lower standard of carbonic acid than .06 per cent.; and uniform diffusion being supposed, we cannot preserve our minimum standard of purity with a less delivery of fresh air than 3,000 cubic feet per head per hour!" This limit is also recommended by Pettenkofer. It will be seen how wide of any such standard is the condition of our steam-cars when each passenger has only from 33½ to 50 feet of air-space; and air so seldom changed as to leave a percentage of from 0.2 to 0.3 volumes of carbonic acid!

The heating and ventilation of cars seem to be inseparable subjects. The monogram of the Baron de Derschau treats

of the former in quite a thorough manner. He mentions only to condemn the various methods in use, such as foot-warmers of hot water or hot tiles, hot-water pipes, stoves of porcelain and iron, and iron stoves outside the cars, over which air is conducted to the interior. He concludes that steam alone is adapted to the purpose; and it is impossible not to agree with him, when we think of the dangerous and unmanageable fire-boxes so universally in use with us. Our stoves, besides overheating the air when approaching a red-heat, as is often the case, are subject to as great extremes of temperature as a bad case of chills and fever. The heat is also badly diffused in the car, and is of little or no aid to ventilation.

Steam-heating is in use on some American railroads, as well as in Russia, Belgium, Germany and Austria. The Baron de Dershau gives a complete description, with plans and specifications, of a system which he has introduced with success in Russia and elsewhere. It consists, briefly, of a special boiler for every eight cars, placed in a small compartment at the end of one of them, and tended from the platform. The steam is conveyed along the roofs in pipes encased in felt, and fed by vertical pipes into heating-tubes along the sides of the car-floor, the water of condensation being returned to the boiler by a pipe beneath the cars.

This system seems to have had no special relation to the ventilation of the compartments to which it was applied. This was provided for by an opening in the roof, allowing for a temperate climate 22 and for a cold climate 28 square centimeters of area for each passenger. Air was admitted by ventilators under the eaves, with openings arranged to catch the draught of the moving train. In a car fitted up for the emperor's summer use, air was admitted through wire screens in the floor, and carried up through hollow pillars containing a cooling mixture, being discharged through small ornamental openings in the capitals into the car.

Most American cars are now made with the Wagner monitor-roof, with patent pipes and apertures for the exit of foul and heated air, in great number and variety. These are not efficient, however, without provision for the admission of fresh supplies of air from below. Side and end ventilators

have therefore been devised for this purpose, but are all open to certain objections. Those in the letter-line over the windows are too high up, and, as well as the wicket-sashes in the doors and end-windows, expose passengers to severe draughts, and, consequently, are seldom allowed to be open.

The eighth annual report of the Master Car-builders' Association, in convention at Cincinnati in June of last year, contains the report of a committee on heating and ventilation of much interest. The discussion on this report clearly shows the difficulties of the subject, and the various opinions and experiences of the representatives of different railroads, as well as a disposition to do something to improve the construction of cars, with respect to their sanitary arrangements. The report admits fully the importance of ventilation, and quotes at length Dr. Smith's experiments upon himself in the lead-chamber. It admits that a car has hardly sufficient air-space for *four*, instead of seventy-five persons; and that the solid and liquid impurities given off by a car-full of passengers, amounting, according to Prof. Huxley's estimate, to two pounds every twenty minutes, will no more go out of roof-ventilators without forcing, than fire-damp out of a mine.

The top and letter-line ventilators have proved entirely inadequate to effect the requisite change of air. The arrangements for admitting air at the end of the car, depending on the motion of the train, are most efficient, but most objectionable on account of the draught. To admit 2,400 feet per minute, at as slow a rate as five feet per second, there must be an opening as large as the whole end of the car; to make a greater velocity endurable, the air must be distributed through the car before reaching the passengers.

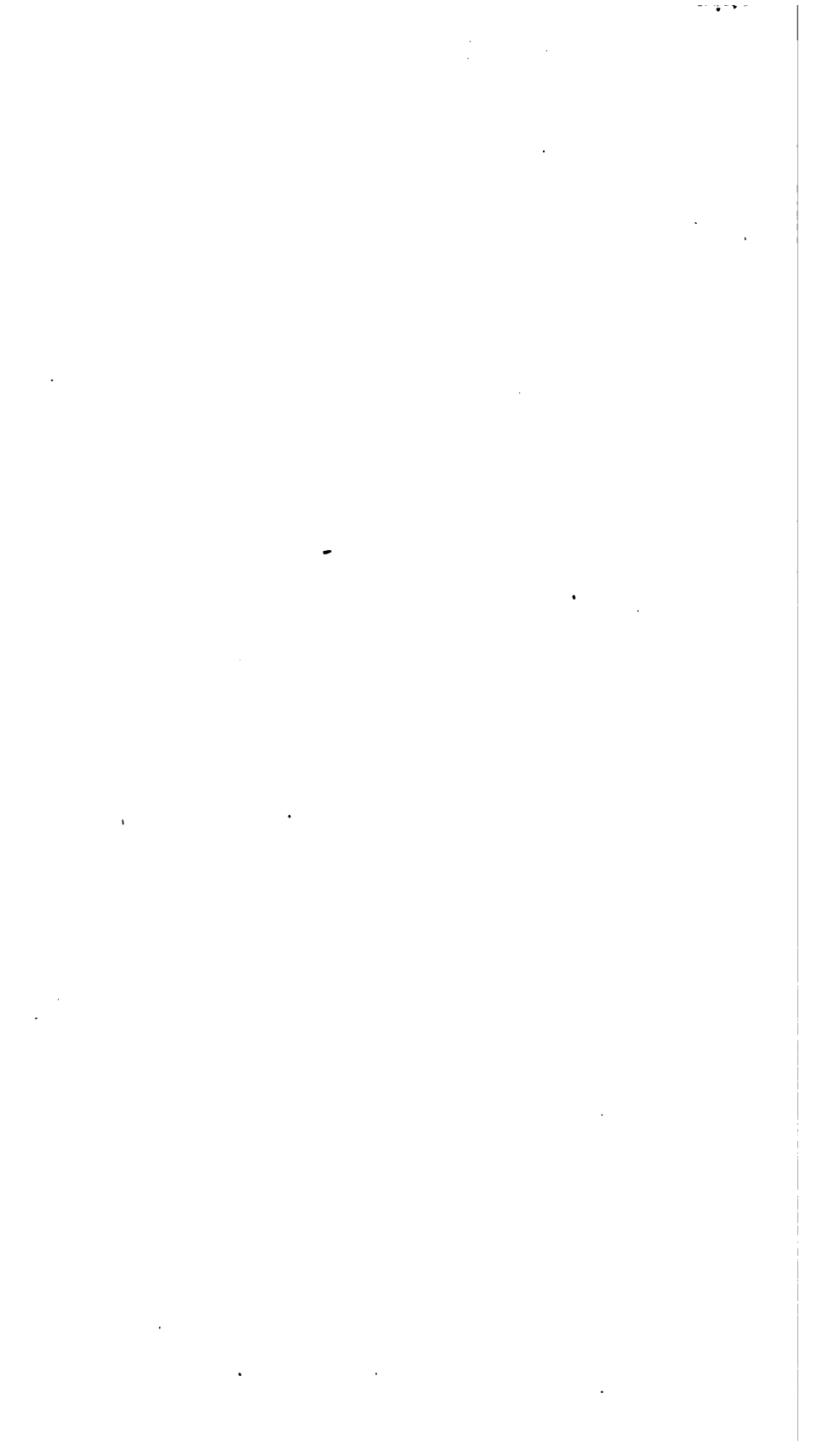
The system of Messrs. Sanborn & Gates, 15 West Street, Boston, was mentioned very favorably by the committee. This consists in a fan-wheel, carried by a pulley attached to one of the axles, which forces air into the car, through a strainer of wire-gauze, at the first side window. The air is conducted around the roof in a 6-inch pipe, perforated at proper intervals, and finds its exit through registers in the floor. This apparatus has been applied to a car on the Boston & Albany Railroad, and was tested by a company of gentlemen well known to the public, in May last. The report of a committee

of observation will be found in the "Boston Post," May 6, 1874. When the car had been thoroughly filled with smoke, on admitting the air it was entirely cleared in about six minutes. It is intended to regulate the temperature and moisture by means of a heater and evaporator.

Mr. Adams, of the Boston & Albany Railroad, says the above apparatus works well, except on up-grades, where speed is too low for the best effect. It seems evident that some combination of steam-heating and forced ventilation must some time be found to solve the problem under consideration, unless railroad companies continue to be deterred by the expense incidental to its introduction. It was not intended to go into a critical examination of methods here. Such practical questions are for car-builders and railroad corporations to consider. The public should see that the efforts of these parties are not suspended through motives of false economy, or a lack of appreciation of the importance of perfect ventilation for all passenger-cars, both summer and winter, and in all weathers.

CREMATION AND BURIAL:
AN EXAMINATION OF THEIR RELATIVE
ADVANTAGES.

BY J. F. A. ADAMS, M. D.
.(OF PITTSFIELD.)



CREMATION AND BURIAL.

One of the most striking results of the Vienna Exposition of 1873, was the diffusion throughout the civilized world of an interest in the subject of cremation, and in the substitution of this ancient method of disposing of the dead for burial, which has been the universal custom of all Christian peoples. At this Exposition, Prof. Brunetti, of Padua, exhibited in a glass box three pounds and three-quarters of delicate white ashes, obtained by the incineration of a human body. The box bore this inscription: "*Vermibus erepti, puro consumimur igni.*" These ashes were the first practical result of a study which had occupied many active minds in Italy since 1869; and all who saw them involuntarily fell to thinking whether such a change, through the purifying agency of fire, were not a more fitting destiny for the cast-off body than the corruption of the grave. This feeling found expression in England through Sir Henry Thompson, who had become a convert to cremation and advocated its adoption. An able reply from Mr. Holland, Medical-Inspector of Burials for England and Wales, opposing the innovation as not being a sanitary necessity, elicited from Sir Henry Thompson a second paper, more powerful in its advocacy than the first. Hence followed an animated discussion of the subject by the press, both in England and America, and a popular interest which has manifested itself in the formation of cremation societies both in London and New York. Simultaneously, the interest has extended itself over Europe, and cremation has found a strong support in Germany, Austria and Switzerland; the first named, with her customary thoroughness, speedily introducing a method far superior to that of Brunetti.

The arguments in favor of cremation are almost exclusively sanitary, being based upon the supposed inadequacy

of burial to prevent the dead from impairing the health of the living. It therefore becomes the obvious duty of all who are in any way concerned with the public health to examine the two methods, in order to ascertain, definitely, whether the continuance of that now in use is really fraught with danger to the community; and, if so, whether the proposed change would satisfactorily remove that danger.

The chief objection to cremation finds its origin in the feeling of repugnance, and even of horror, which is naturally excited in the minds of the majority of civilized people, by the idea of doing violence to the remains of the beloved dead. Among Christians, this feeling is rendered especially strong by the faith in the resurrection; which it is so difficult for the human mind, clinging as it does to symbols, to entirely dissociate from the material body, that this becomes invested with a peculiar sanctity. But this repugnance is mainly due to a habit of the mind, induced by education; and, if burning were once substituted for burying, it is probable that in the minds of the next generation the repugnance would be transferred from the one method to the other. Even now the change is desired by a not inconsiderable number of people; and, as familiarity with the subject increases, this number will doubtless enlarge.

The other arguments beside the sanitary one, which have been adduced in favor of cremation, are, first, that it would prevent premature interment; second, that it would reduce the expense of funerals; third, that it would do away with the exposure of mourners in standing about the grave during the process of interment; and fourth, that the ashes, enclosed in urns, might be kept in dwellings or *columbaria*, safe from the profane touch of the stranger. Sir Henry Thompson boldly advances another, which may be called the agricultural or economico-technical argument; namely, that the ashes might be utilized as a fertilizer.

Of these arguments, the first is the most important, for premature burial is, in the minds of many persons, regarded with the utmost dread; and burning would insure an instantaneous and almost painless death in case it had not already occurred. But the reply has been made that burial alive is of exceedingly rare occurrence, and may be easily rendered

impossible by the general adoption of such precautionary measures as have for many years been in successful operation at the houses of reception at Frankfort and Munich. As for the expense of funerals, that is a matter chiefly regulated by fashion, and would be as great in the one case as in the other; for the mere process of burning the body could scarcely be done more cheaply than that of digging a grave. The third argument is of some weight. The fourth is debatable, for urns may be as easily desecrated as graves. The fifth argument, in proposing to make an article of commerce of the remains of our friends, at once shuts itself out from a hearing.

The opponents of cremation have for arguments, in addition to the *sentimental* one already cited, first, that its adoption, by removing evidences of murder, would tend to the promotion of crime; and, second, that the gases from the cremation-furnace might prove more harmful to the community than any evils connected with burial-places. Of these, the former has a positive weight, which, however, may be so diminished by increased precautions, that it is lightly regarded by the cremationists; and the value of the latter can only be determined by observation of the practical results of the proposed process.

Among the clergy, no uniformity of opinion regarding cremation can be said to exist. By many of this class, it is earnestly opposed on religious grounds. Thus, the bishop of Lincoln, in a sermon preached on the 5th of July last, said that "one of the very first fruits of its adoption would be to undermine the faith of mankind in the doctrine of the resurrection of the body." Others, however, look upon cremation more favorably. Sir H. Thompson says: "Clergymen are anxious to demonstrate how few are the words requiring change in our burial service to render it wholly applicable to cremation." The bishop of Manchester, in consecrating a cemetery on the 22d of March last said: "People who had believed in immortality had, in previous times, burnt the bodies of their dead. He wished his hearers to dissociate the resurrection from physical conditions. Could they suppose that it would be more impossible for God to raise up a body at the resurrection, if needs be, out of element-

any particles which had been liberated by the burning, than it would be to raise up a body from dust, and from the elements of bodies which had passed into the structure of worms?"

It therefore appears that the only really powerful argument in favor of cremation is the sanitary one; and that against it we have also a sanitary argument, a legal one, and a strong popular prejudice. The essential points, then, in the discussion are these:—

1. Is cremation a practicable and safe method?

2. If so, are the evils necessarily resulting from burial so great as to demand a change?

If to both these questions an affirmative answer can be proved, all objections to cremation become of little value; but if either of them receive a negative answer, we are not justified in advocating any change.

To an investigation of these two questions, the present paper will be devoted; the first division of the subject comprising a brief history of cremation, with an examination of the processes by which it has been accomplished; and the second being a study of the effects of the practice of burial upon the public health. The first will be a mere compilation from various authors, while, in preparing the second, recourse has been had to sanitary literature, to chemical research, and to an extensive correspondence with physicians, especially such as have interested themselves in sanitary subjects. Although the investigation has been the most thoroughly pursued within the State of Massachusetts, assistance has been sought and gladly accepted from all quarters.

CREMATION: ITS HISTORY AND METHODS.

1.—In Ancient Times.

To trace back ancient manners and customs to their origin is always a difficult and often an impossible task; and, in the case of burning the dead, historians have been unsuccessful in fixing the date of its first adoption. That it was not the earliest mode of disposing of the dead is conclusively shown. Our first barbarous preadamite progenitors either exposed their dead to be devoured by the beasts of the field, or did

the eating themselves; in which latter case, the idea of "funeral baked meats" no doubt filled their minds with an unhallowed joy. The first method which indicated any care of the dead was burial, and this we find practised by the ancient Hebrews, Greeks, Romans and Phœnicians. By the Hebrews no other method was ever largely adopted, but with the other nations of antiquity burning became the prevailing custom. When cremation was first adopted by the Greeks is a disputed point. By some it is thought to have been first resorted to during the Trojan war, as a means of carrying the remains of chieftains back to their native country. The first Greek mention of it is Homer's account of the funeral rites of Patroclus and Hector; but Homer evidently did not look upon the process as an innovation, but rather as the common usage. Jamieson * believes that cremation was brought into Greece by the Thracians, by whom that country was largely peopled. Both the Thracians and Phrygians practised it, in advance of the Greeks, and the former are believed to have received it from their progenitors, the Scythians, who inhabited Tartary. Rome, in her earliest days, buried her dead, as Pliny tells us. Remus was buried, according to Ovid; so also was Numa; but the Consul Manlius burnt the body of his son. Cornelius Sylla was the first of the Cornelian family to be burned, B. C. 676. The practice had not been uncommon before, but from this time became more prevalent, reaching its height in the latter days of the republic. The early Christians returned to the practice of burial, and, in the fourth century, when Christianity became fully established, cremation became obsolete. As a general custom, it ceased in the reign of Marcus Antoninus, although, fifty years later, the body of Severus was burned with great pomp. With neither the Greeks nor Romans was burning ever the exclusive custom; but it was esteemed more honorable than burial, and was most common among the upper classes. In striking contrast with this is the fact that the inhabitants of Colchos and Iberia exposed the bodies of those who had done noble actions to be devoured by dogs, but burnt the cowardly.† Plato wrote to

* On the Origin of Cremation. Trans. Royal Society of Edinburgh; vol. viii., 1817.

† Among the *Monto* sect in Japan, at the present day, cremation is practised by the lower classes, but not by the upper.

Socrates that it was a matter of indifference to him whether his body were burned or buried. In Rome, persons who had been struck by lightning, and children who had not cut their teeth, were not burned, but buried.

Among other ancient nations cremation was likewise adopted. In Asia, the practice was very extensive, and has continued till the present day. In Africa, it was accepted by the Carthaginians, and also by the Egyptians, after embalming was discontinued. Other European nations among whom it prevailed were the Celts, Sarmatians, Germans, Gauls, Danes, Swedes and Norwegians. In America, it has long been the practice among certain Indian tribes, and with some of them has not yet been entirely abandoned.

In England, several collections of cinerary urns have been discovered, one of which, in a field in Old Walsingham, Norfolk, exhumed in 1658, was described by Sir Thomas Browne.* The collection consisted of between forty and fifty urns, buried in a sandy soil, not a yard deep nor far apart, and containing about two pounds of bones, with other extraneous objects. These urns bore no date or inscription, but were probably contemporary with the early Roman occupation of the island, although some persons are inclined to consider them as early Saxon or Danish.

The *pyre* was the means by which cremation was, in early times, effected. Among the Romans, this was a pile of rough logs, with four equal sides, of which the law of the twelve tables forbade any polishing or adornment; but they were sometimes covered with dark leaves. The body was placed upon the pile, with the couch upon which it had been carried. The nearest relative, with averted face, applied the torch, and the flames were fed with cups of oil, ornaments, clothing and the favorite viands of the deceased.. To these were added various perfumes, which, though forbidden by law, were rendered necessary by the disgusting odor. In the case of an emperor or illustrious general, there was much additional ceremony,—animals were killed and laid upon the pile, and, in the earlier times, captives and slaves. The soldiers marched thrice around the pile, and, in the latter days of Rome, gladi-

* *Hydriotaphia—Urn-Burial*; 1658.

ators were hired to fight about it. When the burning was completed, the embers were soaked with wine, the bones and ashes of the deceased gathered by the nearest relatives, who sprinkled them with perfumes and placed them in an urn. These urns were often very beautiful and richly decorated; they were commonly of marble, alabaster or baked clay, and bore an inscription beginning with the letters D. M., or D. M. S. (*Dis Manibus Sacrum*).*

The urns were deposited in tombs outside the city, with a few exceptions. Emperors and vestal virgins were permitted to be buried within the walls of Rome. The ashes of Valerius, Publicola and other illustrious patricians were likewise thus privileged; and the right was enjoyed by their descendants, but never used. The private tombs were generally built at the sides of the roads leading to Rome, especially on the Appian Way, where an almost uninterrupted line of tombs extended for many miles from the gates. The public burial-places were the Campus Martius and the Campus Esquilinus, the former containing the ornamented tombs of illustrious citizens buried by the State, and the latter the graves of paupers, whose remains were placed in little pits or caverns, called *puticuli*. The neighborhood of the latter becoming unhealthy through the number of interments, it is recorded that it was given to Mæcenas, who converted it into a garden, and there built a magnificent dwelling. The tombs of the rich were commonly built of marble, with an open space in front, planted with trees. *Columbaria* were tombs with many niches, like dove-cotes, as the name implies.

In Homer's description of the funerals of Patroclus and Hector, the Greek and Trojan method of cremation is accurately narrated. As frequent reference is made to the burning of the body of Patroclus, we will quote the passage in which it is described:—†

197

"They who had the dead in charge
Remained, and heaped the wood and built a pyre
A hundred feet each way from side to side.

*For representations of a great number of these urns—Greek, Roman and barbarian—the reader is referred to the elaborate work of Montfaucon, "*L'Antiquité Expliquée et Représentée en Figures*." Paris, 1723.

† *Iliad*, Book XXIII., line 197, Bryant's translation.

With sorrowful hearts they raised and laid the corse
 Upon the summit. Then they flayed and dressed
 Before it many fatlings of the flock,
 And oxen with curved feet and crooked horns.
 From these magnanimous Achilles took
 The fat, and covered with it carefully
 The dead from head to foot. Beside the bier,
 And leaning toward it, jars of honey and oil
 He placed, and flung, with many a deep-drawn sigh,
 Twelve high-necked steeds upon the pile. Nine hounds
 There were, which from the table of the prince
 Were daily fed; of these Achilles struck
 The heads from two, and laid them on the wood,
 And after these, and last, twelve gallant sons
 Of the brave Trojans, butchered by the sword;
 For he was bent on evil. To the pile
 He put the iron violence of fire,
 And, wailing, called by name the friend he loved."

307 * * "They quenched with dark red wine
 The pyre, where'er the flames had spread, and where
 Lay the deep ashes: then, with many tears,
 Gathered the white bones of their gentle friend,
 And laid them in a golden vase, wrapped round
 With caul, a double fold. Within the tents
 They placed them softly, wrapped in delicate lawn,
 Then drew a circle for the sepulchre,
 And, laying its foundations to enclose
 The pyre, they heaped the earth, and, having reared
 A mound, withdrew."

After pyre-cremation, the identification of the ashes, aside from the bones, was impossible; but the Egyptians kept them separate by wrapping the body in a covering of asbestos.

Whether the ancients were actuated by any sanitary motives in their adoption of cremation is a matter of doubt; but that this was one of their motives seems probable, since the earliest Greeks and Romans used their dwellings as tombs. In times of war and pestilence, the sanitary phase of the subject must have presented itself strongly to their minds. Other reasons, however, were probably more weighty. In foreign wars it was necessary to burn the remains of the chieftains, in order to convey them to their homes. This method also permitted the remains to be longer kept in the sight and presence of the mourners than if buried. Another powerful motive was the protection of the remains from indignities, which, in troubled times, they were apt to receive from their enemies;

for instance, Sylla, who had thus served the body of Marius, ordered his own body to be burned to prevent retaliation from the friends of the latter. Other reasons were based upon ancient philosophical and religious ideas. Of the former class, may be cited the belief that the body was by fire most speedily reduced to the first principles, and also the tradition that the world was to be destroyed by fire. To the latter class belong the beliefs that the body was unclean, after the departure of the soul; that by the action of fire the soul was released from all its corporeal bonds, and that the soul itself was thus purified from the contamination which it had contracted in its embodied state. The idea of sacrifice also entered largely into the ceremony of burning.

We have already observed that, as Christianity spread, cremation fell into disuse. The early Christians always buried their dead—at least, there is no positive evidence to the contrary; and those of Rome constructed for this purpose the catacombs, outside the city. They wished to give the remains of their friends the same treatment that was accorded to Christ and the apostles, and therefore adopted the Jewish custom of burial. That their refusal to burn was not connected with ideas of the resurrection is shown by Minucius Felix, who introduces a heathen as saying, "For this reason they execrate the funeral pile and condemn sepulture by burning, as if it precluded the possibility of resurrection." To this Minucius replies, "We do not, as you believe, fear any injury from this kind of sepulture, but we adhere to inhumation as the more ancient and the preferable mode."* It is also stated of the primitive Christians that they objected to cremation that the practice involved the idea of inhumanity to the living. Some of the heathen objected to it on the same grounds, and its employment appears to have been always optional, both in Greece and Rome.

The frequent occurrence of the letters D. M. on the tombs of the early Christians led Merivale to the conclusion that they were in the habit of burning their dead; but Rossi† considers this insufficient ground upon which to support the weight of so new and startling a theory. He surmises that

* Jamieson, *op. cit.*

† *Roma Sotteranea*, compiled by Northcote and Brownlow, London, 1869.

these letters may have been used carelessly, from custom, without advertence to their real meaning; or the tombstones may have been bought with the letters already inscribed; or that they may have been put on by surviving relatives, ill-instructed in the faith.

2.—*In Modern Times.*

From the fourth century until the most recent times, the funeral pile has remained extinct in Europe, and the dead have been consigned to the earth or the tomb. The first modern reference to the subject was Sir Thomas Browne's essay, "Urn-Burial," published in 1658, and this took merely an historical and metaphysical view of the subject, and did not advocate its revival. In a curious old book, "Philosophical Discourses of the Virtuosi of France," published in English in 1664, conference 240 is upon the subject, "Whether it be better to bury or to burn the bodies of the dead." In the discussion, which is chiefly of a sentimental character, one disputant advocates cremation, as preventing contagion, and another opposes it, as likely to corrupt the purity of the air. The subject is not again heard of, except in antiquarian researches, such as the splendid work of Montfaucon, published in 1722, until the French Revolution, when the minds of this people, thirsting for change, and with a special taste for classic customs, turned to cremation as an innovation to be desired. In the fifth year of the Republic (1796), Legrand d'Aussy, in a memoir on "National Sepultures," declared the necessity of substituting incineration for burial. In the same year, a committee of the council of the five hundred was deputed to project a law for this reform; and the Institute of France offered a prize of 1,500 francs for the scientific study of the question. Of the forty authors who offered memoirs in competition for this prize, all favored the adoption of the system, provided that its employment be made optional, so as not to conflict with the principles of liberty. It does not appear, however, that the investigation, at this time, bore any practical fruit.

But, on the 8th of July, 1822, a veritable cremation, whose fame is world-wide, occurred in Italy, on the shore of the Mediterranean. The poet Shelley, and his friend Wil-

liams; having been drowned by the upsetting of a boat near Leghorn, their bodies were washed ashore, and were there burned by Byron, Leigh Hunt and Trelawney. This act was in compliance with the quarantine laws of Tuscany, which required that everything drifting from the sea should be burned. The process, with many revolting details, is minutely described by Trelawney.*

In 1856, an earnest discussion of the subject of cremation again arose in Paris. A new journal, "La Cremation," was established, devoted to the advocacy of burning, and the medical journals took up the subject with interest. M. Caffé was the chief partisan of the reform, and urged that the subject be calmly discussed, especially in overgrown capitals, like London and Paris. The project was opposed by the "Gazette Hebdomadaire," on the grounds that it would be more difficult on the battle-field than burial, and that the emanations resulting from the process would be far from innoxious. A "sarcophébus," with a metallic table, instantaneous slide and concealed furnace, was, at this time, proposed.

At the same time, an interest in the subject was also felt in Italy. In January, 1856, Prof. Coletti, rector of the University of Padua, presented to the Academy of Science and Letters of that city, a memoir earnestly advocating cremation.†

The subject was soon laid aside, however, and not revived until 1866, when Dr. Giro‡ published an article in which he contended that burial is a practice "in opposition to humane sentiments, hygiene, and the civil life of nations." In the following year appeared a paper by Du Jardin§, of Genoa, in which he approved the ideas of Coletti.

But the grand revival of the question did not occur until 1869, when it was presented to the Medical International Congress of Florence, by Profs. Coletti and Castiglioni, "in the name of public health and of civilization"; and a resolution was passed expressing a wish that "every possible means be employed to obtain legally, in the interest of the laws of hygiene, that the incineration of bodies should be

* Recollections of the Last Days of Shelley and Byron.

† Sulla Cremazione dei Cadaveri.

‡ Sulla Incinerazione dei Cadaveri. ["Gazz. Med. Ital.," prov. Venete. 1866.]

§ Sulla Cremazione dei Cadaveri. ["La Salute." Genoa. 1867.]

substituted for the present system of inhumation." In the following year, papers were published by Castiglioni* and Du Jardin,† the latter calling attention to the defective condition of many cemeteries of the kingdom. In France, in the same year, in consequence of the fatal war then in progress, the question of burning the dead naturally presented itself. It was proposed by Dr. Lapeyrère, who styled it "this mode, unpopular in our religion, but before which the Hebrews (our parents in religion) do not hesitate, in view of preventing contagion." The attention of the council was called to the "necessity of the immediate adoption of cremation" by Inspector Laveran, director of the school of Val de Grace. Baron Larrey, surgeon-in-chief of the army of Paris, to whom the subject was referred, made a report in May, 1871, in which he showed the necessity of choosing for a cemetery a permeable soil, adapted for drainage, in which will be dug deep ditches, liberally strewn with quicklime, which will give rise to a slow combustion. This would be, he said, a true "latent cremation," unperceived in its effects, which will offend neither religious beliefs nor local prejudices. These ditches should be covered with a layer of earth thick enough to neutralize the emanations of volatile principles and favor vegetation.

After the battle of Sedan, burning was resorted to in a very imperfect manner by the Prussians; but Dr. Parkes‡ states that the experiment appears to have been unsuccessful. The same may be said of the attempt made at Dresden, in 1871, to burn animals, victims of the cattle-plague.

At the Medical Congress, held at Rome in 1871, a similar resolution was passed to that adopted at Florence the preceding year. At this time, also, appeared a paper by Dr. Pini,§ of Milan, advocating cremation.

In 1872, Italian papers advocating the practice of burning were produced by Drs. Ayr,|| Valeriani,¶ Peyriani,** and

* Sulla Cremazione del Cadaveri. 1870.

† La Guerra e le sue Vittime, l'Incinerazione ed il Seppellimento. 1870.

‡ A Manual of Practical Hygiene. 1873. p. 442.

§ La Cremazione del Cadaveri. ["Gazz. de Milan." 1871.]

|| La Cremazione e l'Igiene. Milan. - 1872.

¶ Sulla Incinerazione del Cadaveri. ["Opinione." Florence. 1872.]

** La Cremazione del Cadaveri. ["Il Presente." Parma. 1872.]

Polli,* and one opposing it by Dr. Rota.† The most important of these papers was that of Dr. Polli, of Milan, which was not only a complete study of the subject, but also contained the first experimental researches. His experiments were performed at the Milan gas-works on dogs, and differed from the ancient method only in the substitution of gas for wood, whence the apparatus is known as the "gas-pyre."

In 1873, the interest in cremation had become very earnest and wide-spread in Italy, both among scientific men and the public at large. The Royal Institute of Science and Letters of Lombardy, had offered the quinquennial (1877) Secco-Comneno prize to the advocates of cremation for the best practical method. The same Institute offered the following declaration to the two chambers of deputies of the kingdom: "The Lombardy Institute, profoundly convinced that the adoption of the process of cremation will mark a stage of progress in the march of civilization, hopes that the government will make all efforts that Italy may be the first to adopt it, and thus set the example to other civilized nations."

In April, 1873, Prof. Maggiorani succeeded in inserting in the new sanitary code for the kingdom of Italy, then under discussion, an article granting permission for families to adopt the process of cremation, the consent of the Superior Council of Health having been first obtained.

Meanwhile, Italian authors and experimenters were busy with the subject. Papers advocating cremation were published by Drs. Formari,‡ Musatti,§ Annelli,|| Giacchi,¶ Pini,** Amati,†† and Brunetti.‡‡ The other side was represented by Prof. Zinno,§§ of Palermo, a zealous advocate of embalment, and enemy of cremation. The hostility of the Church to this system also found vigorous expression in the

* Sulla Incinerazione dei Cadaveri. Memoir presented to the Royal Institute of Lombardy. 1872.

† L'Incinerazione dei Cadaveri è Ammissibile? Chiari. 1872.

‡ Humatio vel Crematio. Turin. 1873.

§ Intorno alla Cremazione dei Cadaveri. Venice. 1873.

|| La Cremazione dei Cadaveri. Milan. 1873.

¶ La Cremazione dei Cadaveri. Florence. 1873.

** La Cremazione dei Cadaveri. ["Annali Universali di Medicina." 1873.]

†† Sulla Cremazione dei Cadaveri. Milan. 1873.

‡‡ La Cremazione dei Cadaveri. Padua. 1873.

§§ Inumazione, Inbalzamazione e Cremazione dei Cadaveri. Naples and Palermo. 1873.

"Osservatore Cattolico," of Milan. The practical work of the year was done by Prof. Gorini, of Lodi, and Prof. Brunetti, of Padua.

Gorini's experiments were made at his laboratory, in September, 1873, and witnessed by a brilliant assembly of scientific men. He first fused in a crucible, at a very high temperature, a substance whose composition is a secret, but which has been conjectured to be a mixture of caustic soda with nitre or chlorate of potash. When fusion had been carried to the point of ebullition, portions of a human body, legs, arms, etc., were thrown in, and completely destroyed in twenty minutes, the solid parts remaining on a metal grating at the bottom of the crucible. The heat was obtained from coke. The combustion was not attended with any crackling sound or offensive odor.

The results of Prof. Brunetti's experiments were exhibited at the Vienna Exposition, and attracted great attention. His apparatus consisted of an oblong furnace, built of refracting brick, furnished with ten side-openings to regulate the draught. In the upper part, was a cornice of tiles to support an iron framework, on which the body was placed, and the whole was covered with a dome-shaped roof; wood was used as fuel. Carbonization was complete in two hours; the body was then reduced to fragments, and, after two hours more, incineration was complete. The bones exhibited at Vienna were white, with a smooth, sharp fracture. From a man weighing ninety pounds, a little more than four pounds of ash was obtained, after the consumption of from one hundred and sixty to one hundred and eighty pounds of wood.

In 1873, cremation was also advocated in France, by *Pietra Santa*,* and in Belgium by the "*Gazette de Bruxelles*."

The opening of the year 1874 found the subject of cremation engrossing a more and more widely-spread interest. A public meeting at Milan, projected during the previous year, was held April 6. Over five hundred persons, of all classes of society, were present. After addresses by Drs. Polli, Coletti, Musatti and others, this vote was unanimously passed:—"That the Italian government, in the next discussion of the new Sanitary Code, already approved by the Senate,

* *La Cremation des Morts en Italie*. ["*Union Médicale*." Paris. 1873.]

admit to Article 185, as optional, cremation of the dead, under the immediate surveillance of the syndics of the communes." One pleasing idea, in connection with cremation, was developed at this meeting, in a letter from Prof. Amati, who said, "Dr. E. Lombardi, Sicilian poet, assures me that, with certain people, the habit has existed of planting seeds of small flowering-plants in the ashes of the dead. These germinated, grew and expanded, and finally were gathered, to be religiously preserved by the family." During the present year, additional papers upon this subject have been published by Dell' Acqua,* Biondelli,† Foldi,‡ Musatti,§ Pini,|| Pisani¶ and Golfarelli.** The last mentioned refers to a case in which the superior council of health, when asked to authorize the removal to Italy of a person who died of yellow fever in America, gave its consent, on condition of the previous incineration of the remains.

In Austria, an enthusiasm was speedily kindled by Prof. Brunetti's specimens at the Exposition. In February last, the Communal Council of Vienna adopted, unanimously, the following resolution:—"Apropos of the buildings to be constructed in the new central cemetery of the city, the Superior Administration will take the necessary measures that, with the least possible delay, optional cremation may be effected." Moreover, the Imperial Academy of Medicine has made a pressing appeal to the chemists and hygienic physicians of Austria and Hungary, for a serious study of the principles of the question. Articles on the subject have appeared in Vienna, by Lanyi,†† Witlacil‡‡ and others.

Switzerland, too, has caught the infection; the most ardent champion of cremation, in that country, being Dr. Wegmann-Ercolani,§§ who published, early in the year, a pamphlet upon

* *La Cremazione dei Cadaveri*. ["*Il Medico di Casa l'Igea*." Milan. April, 1874.]

† *La Cremazione dei Cadaveri Umani*. Milan. 1874.

‡ *La Cremazione dei Cadaveri*. ["*Il Sole*." Milan. 1874.]

§ *Intorno di Progressi della Cremazione dei Cadaveri*. ["*Giorn. Venet. del Scien. Med.*" 1874.]

|| *Sulla Cremazione dei Cadaveri*. ["*La Salute*." Genoa. 1874.]

¶ *La Cremazione dei Cadaveri*. ["*Gazz. Med. Ital. Lombard.*" 1874.]

** *Sulla Cremazione dei Cadaveri*. Florence. 1874.

†† *Ueber die Verbrennung der Leichen am Schlachtfelde*. ["*Allg. Militär-ärztl. Zeitg.*" Vienna. 1874. XV., p. 92.]

‡‡ *Ueber Leichenverbrennung*. ["*Wien. Med. Presse.*" 1874. XV., p. 361.]

§§ *Die Leichenverbrennung als rationnellste Bestattungsart*. Zurich. 1874.

the subject, besides contributing various articles to the daily papers. As a result of his zealous efforts, two cremation societies have been formed, one at Zürich and one at Aarau. At meetings held at Zürich, on the 7th and 10th of March, it is said that more than 2,000 persons were present, and the popular interest was very great.

In Germany, the principal writers upon the subject, during the present year, have been Reclam,* of Leipzig; Fleck† and Küchenmeister,‡ of Dresden, and Ullersperger,§ of Erlangen. Of these, the first named has made the most notable contribution to the science of cremation, by introducing, for its practical application, the Siemens furnace, which has been used with success in the working of iron and glass. By means of it, an enormously high temperature can be obtained, at the expense of a small amount of fuel, even though this be of inferior quality. Peat, wood or charcoal may be used. The principle of the furnace is called that of "regenerative heat," and its essential parts are three chambers, called respectively the *generator*, *regenerator* and *combustion chamber*. The fuel is placed in the generator, a species of brick oven, where it is burned with a limited access of air, whereby a combustible gas is produced, consisting chiefly of carbonic oxide, nitrogen and carburetted hydrogen. This escapes from the generator and enters the regenerator at a temperature of 150° to 200° C. This second chamber is of cubical shape, with walls of stone, and the interior filled with a network of horizontal and vertical bars. By contact with the combustible gases, this chamber becomes so intensely heated that the gases enter the combustion chamber, where the body is placed, at a temperature of 3,000° C. From this they pass to the chimney, through a second regenerator, where all noxious vapors from the corpse are consumed. Reclam caused one of these furnaces to be specially arranged for purposes of cremation, by the construction of an apartment above, from which the body could be lowered directly into the combustion chamber. Of this method, Prof. Reclam

* De la Crémation des Cadavres. ["Monit. Scientifique." Paris. 1874. IV., p. 484.]

† Beitrag zur Beantwortung der Frage von der Leichenverbrennung. ["Allg. Zeitsch. für Epidemiol." Erlangen. May and June, 1874.]

‡ Ueber Leichenverbrennung. Erlangen. 1874.

§ Urne oder Grab. Erlangen. 1874.

says that it "is the simplest and most satisfactory to the bereaved. Before the friends assemble, the body is lowered into an empty space, containing only air raised to white heat, in which it burns odorless, and the ash alone remains. Heated air alone escapes; there is neither vapor nor smoke, the combustion is so perfect."

The cost of this furnace is estimated at \$1,250, and the time required for the combustion of a human body, one hour. By means of it, at a cost of seventy-five cents for fuel, two hundred pounds of animal tissue have, in the space of an hour and a half, been reduced to white ashes, without sound or smell.

Two genuine acts of cremation in Dresden, by means of this furnace, have been reported; the wife of Sir Charles Dilke being the subject in one case, and the wife of a German physician in the other. The following accounts of the latter case is taken from one of the daily papers.* "The hall around the furnace was decorated with flowers, and in every other respect the solemnity which should attend so serious a rite was duly observed. The process of cremation was screened from the eyes of the lady's friends by an iron door. There was no smoke nor any unsightly transformation of the body. When the coffin was consumed, the body appeared in its natural state, then red-hot, and at last appeared to be of translucent white. From this it crumbled into ashes. Up to the period of its entire consumption by the flames, the process was merely as a rapid drying up. After seventy-eight minutes, all organic matter was gone, and nothing remained but a small heap of ashes, which was conveyed away in an urn." This occurred on the 6th of November. Shortly after, the government of Saxony forbade the practice of cremation.

The adoption of cremation has been proposed at one of the Jewish cemeteries at Berlin; but we are not aware that the ceremony has yet been performed.

In France, the interest in cremation has not become general. Pietra Santa has followed his paper of last year with a second.†

* "Boston Daily Advertiser," December 1, 1874.

† *La Crémation en France et à l'Étranger*. ["*Annales d'Hygiène Publique*." Paris, July, 1874, p. 179.] To this paper we are indebted for much valuable information relating to the recent history of the subject.

That the new system is not entirely devoid of support in that country, is shown by the following extract from the report presented to the council of Paris, early in the present year, by Mr. Hérold, upon the project of creating a cemetery at Méry sur Oise.

"It is not without regret that some members of the commission have had to forego proposing to you the examination of the system of cremation. In their estimation, cremation would not only have the incontestable advantage of simplifying the solution of the material question in the twofold point of view of salubrity and space, but also, far from interfering with the affectionate remembrance of the dead, it would facilitate its exercise, and, consequently, render it more general. Besides, if prejudices against cremation exist, this would only be a reason for not rendering it obligatory, but not for interdicting it."

The honor of being the first and chief promoter of cremation in England belongs to Sir Henry Thompson, an eminent surgeon and physicist, whose brilliant paper, entitled "The Treatment of the Body after Death," in the "Contemporary Review," for January, 1874, at once aroused public interest, and drew forth a large measure of approval and some vigorous opposition. He based his advocacy of cremation upon these grounds:—That the disposition of the remains in no wise concerns the deceased, the survivors being the only interested parties; that all dead animal matter becomes ultimately resolved into carbonic acid, water, ammonia, etc., which are gaseous and mingle with the atmosphere, and mineral constituents, which remain where the body lies, until dissolved and washed into the earth by rain; that this is a process of combustion or oxidation, and is essentially the same, whether completed in a few hours or thousands of years; that in the slow process of decomposition which occurs after burial, intermediate poisonous compounds are formed, which, by tainting the air and the water, are a source of danger to survivors, and that hence the public health demands that burial should be discontinued and cremation adopted. He considers that the prohibition of *intra-mural* interment is but a step in the path of progress, and also that *extra-mural* cemeteries are certain, from the rapid growth of cities and towns, soon to be surrounded with dwellings, and ultimately

built upon. To quote his own words :—" At present, we who dwell in towns are able to escape much evil by selecting a portion of ground, distant, in this year of grace 1873, some five or ten miles from any very populous neighborhood, and by sending our dead to be buried there,—laying by poison, nevertheless, it is certain, for our children's children, who will find our remains polluting their water-sources, when that now distant plot is covered, as it will be, more or less closely, by human dwellings."

Sir Henry takes also an economic view of the subject. He computes that 80,430 persons who died in London in 1871, would furnish about 206,820 pounds of ashes and bone-earth, equivalent to six or seven times its weight of dried and unburned bones, as they ordinarily exist, in commerce; and that the utilization of this for fertilizing purposes would save an enormous annual outlay for the importation of bones, the value of such bones imported in 1872 amounting to £753,185, or nearly four million dollars. He includes in the economic argument the expense of funerals, which he estimates at an average, in London, of £10, or £800,000 for the past year. He believes the adoption of cremation would greatly reduce this expense. The prevention of premature burial he likewise alludes to as a reason for adopting cremation.

In the February number of the same review, Mr. Philip H. Holland* replies to the paper of Sir Henry Thompson, contending that cemeteries, if properly cared for, are in no wise injurious; that well-water is far more likely to be contaminated by cesspools and drains than by graveyards, and that the gases arising from graves are no more than can be taken up by the vegetation. As regards "our children's children," he does not believe the present cemeteries will ever be built over, but will be, when full, reserved as public parks. The economic view of the subject, he questions Sir Henry's seriousness in proposing. In reference to the saving in ashes and bone-earth by cremation, he says: "If this is not meant to be a suggestion that we use our fathers' ashes as a turnip-dressing, which would be worse than to 'botanize on a mother's grave,' it is hard to see what is intended; and if that

* Burial or Cremation? A Reply to Sir Henry Thompson, by Philip H. Holland, M.R.C.S., Medical Inspector of Burials. ["Contemporary Review," February, 1874.]

be what is meant, why stop there? Why not, as we easily might, reduce to powder the flesh as well as the bones of our relatives and friends, to be used as a substitute for guano, thereby saving the whole amount of £700,000 a year; which, divided amongst the thirty million inhabitants of the British Isles, would amount to the magnificent sum of sixpence a head every year, obtained at the trifling cost of outraging family affection, and desecrating what most of us regard with tender reverence?"

This paper elicited from Sir Henry Thompson a vigorous rejoinder,* in the March number of the same magazine, in which he reiterated and fortified his previous arguments, and also described the process of cremation, as performed under his own direction. By means of a powerful reverberating furnace, he succeeding in reducing two bodies of animals, weighing respectively 47 and 140 pounds, to an amount of ashes weighing, in the one case, $1\frac{3}{4}$ pounds, and in the other, 4 pounds. The time consumed was less than an hour; no trace of odor was perceived, and of the ashes he says:—"Nothing can be more pure, tested by sight or smell, than they are, and nothing less suggestive of decay or decomposition. It is a refined sublimate, and not a portion of refuse, which I have before me."

He adds: "In the proceeding above described, the gases which leave the furnace-chimney during the first three or four minutes of combustion are noxious; after that time they cease to be so, and no smoke would be seen. But those noxious gases are not to be permitted to escape by any chimney, and will pass through a flue into a second furnace, where they are entirely consumed: and the chimney of the latter is smokeless,—no organic products whatever can issue by it. A complete combustion is thus attained. Not even a tall chimney is necessary, which might be pointed at as that which marked the site where cremation is performed. A small jet of steam quickening the draught of a low chimney is all that is requisite. If the process is required on a large scale, the second furnace could be utilized for cremation also, and its products passed through another, and so on without limit."

This ardent investigator subsequently employed the Sie-

* Cremation: A Reply to Critics, and Exposition of the Process.

mens furnace, of which we have already spoken. In describing its working in his hands, we cannot do better than again to borrow his own words :—

"By means of one of the furnaces invented by Dr. Wm. Siemens, I have obtained even a more rapid and more complete combustion than before. The body employed was a severe test of its powers, for it weighed no less than 227 pounds, and was not emaciated. It was placed in a cylindrical vessel, about seven feet long by five or six in diameter, the interior of which was already heated to about 2,000° Fahr. The inner surface of the cylinder is smooth, almost polished, and no solid matter but that of the body is introduced into it. The products, therefore, can be nothing more than the ashes of the body. No foreign dust can be introduced,—no coal or other solid combustible being near it; nothing but heated hydrocarbon, in a gaseous form, and heated air. Nothing is visible in the cylinder before using it but a pure, almost white interior, the lining having acquired a temperature of white heat. In this case, the gases given off from the body, so abundantly at first, pass through a highly heated chamber among thousands of interstices made by intersecting fire-bricks, laid throughout the entire chamber, lattice fashion, in order to minutely divide and delay the current, and expose it to an immense area of heated surface. By this means they were rapidly oxidized, and not a particle of smoke issued by the chimney. No second furnace, therefore, is necessary by this method to consume any noxious matters, since none escape. The process was completed in fifty-five minutes, and the ashes, which weighed about five pounds, were removed with ease."

In making these experiments, the bodies of the lower animals were employed.

Sir Henry defends cremation from the charge of being an incentive to crime, in destroying the proof of murder by poisoning, and contends that this danger would be completely obviated by the appointment of inspectors, without whose written permission no burial can take place. His summing up is as follows :—

"For the purposes of cremation, nothing is required but an apparatus of a suitable kind, the construction of which is

well understood and easy to accomplish. With such apparatus the process is rapid and inoffensive, and the result is perfect. The space necessary for the purpose is small, and but little skilled labor is wanted.

"Not only is its employment compatible with religious rites, but it enables them to be conducted with greater ease and with far greater safety to the attendants than at a cemetery. For example: burial takes place in the open air, and necessitates exposure to all weathers, while cremation is, necessarily, conducted within a building, which may be constructed to meet the requirements of mourners and attendants in relation to comfort and taste.

"Cremation destroys instantly all infectious quality in the body submitted to the process, and effectually prevents the possibility of other injury to the living from the remains at any future time. All care to prevent such evil is obviously unnecessary, and ceases from the moment the process commences. The aim of cremation is to prevent the process of putrefaction.

"On the other hand, burial cannot be conducted without serious risks to the living, and great care is required to render them inconsiderable with our present population. Costly cemeteries also are necessary, with ample space for all possible demands upon it, and complete isolation from the vicinity of the living, to insure, as far as possible, the absence of danger to them.

"It is a process designed essentially to prolong decay and putrefaction with all its attendant mischief; and the best that can be affirmed of it is, that, in the course of many years, it arrives, by a process which is antagonistic to the health of survivors, at results similar to, but less complete, than cremation produces in an hour, without injury to any."

These papers aroused a very considerable interest in cremation both in England and America. A cremation society was formed in London, whose secretary, Mr. Wm. Eassie, C. E., has written a paper on the subject.*

* Cremation in its Bearings upon Public Health. ("British Medical Journal," Aug. 1, 1874.) Other valuable papers have appeared in the "London Medical Record" for Jan. 14, and II. p. 14, 1874, and the "Medical Times and Gazette" I. p. 181 and I. p. 510, 1874, besides references to the subject in the "Lancet" for July 11, Aug. 15 and Aug. 22, 1874; also a sharp criticism of Sir Henry Thompson's first paper in the "Spectator" for Jan. 3, 1874.

In the United States, the interest in cremation does not appear to be as yet very general or profound. The most complete papers upon the subject which have appeared in this country are those of Professor Frazer,* of Philadelphia, and Dr. Bayles,† of New York, who give it their approval. Numerous references to the subject can be found in the various medical journals and daily papers, during the first half of the present year, almost entirely in the form of reviews or translations of foreign publications. Some journals approve and others disapprove of the new process, but the majority appear to give it a qualified approval. The daily press has appeared to regard it rather as a curiosity; and, the novelty having worn off, the references to it during the latter half of the year have been few.

On the 3d of April last, a meeting was held in New York of those favoring the practice of cremation, and steps were taken for the formation of a cremation society.‡

No case of cremation has yet occurred in the United States, although one was reported in Philadelphia, in April last, *Pietra Santa* alluding to it as a genuine case.

To recapitulate: the modern methods of cremation, all of them introduced during the past three years, are the following:

1. The gas-pyre of Polli, the process lasting several hours, giving rise to a thick smoke and offensive odor. Complete incineration was with difficulty effected.

2. Gorini's method, by means of chemical reagents in a state of fusion. The burning was completed in twenty minutes, and no unpleasant odor resulted. The fuel used was coke. We are not aware that a whole body has ever been treated in this way. The method is said to be expensive, owing to the cost of the chemicals and the large amount of fuel requisite to bring them to the point of ebullition.

3. Brunetti's method, with a brick furnace and wood as fuel. The process lasted four hours, and required the artificial reduction of the body to fragments to render it complete. The amount of fuel was small, 160 to 180 pounds.

* The Merits of Cremation. ["Penn. Monthly," June, 1874.]

† Disposal of the Dead. ["Sanitarian," June, 1874.] Also, Cremation and its Alternatives. ["Popular Science Monthly," June, 1874.]

‡ See New York papers of April 4, 1874.

4. Sir Henry Thompson's method, by means of an ordinary reverberating furnace, a second furnace being necessary to consume the smoke and noxious gases. The burning occupied less than an hour, and incineration was complete.

5. Cremation by means of the Siemens furnace, practised by Reclam, of Leipzig, Sir Henry Thompson, and Siemens himself. The time required is fifty-five or sixty minutes. Inferior fuel may be used. Incineration is complete, and no smoke nor noxious vapors escape.

The methods practised by various Asiatic nations, at the present day, differ but little from the pyre-cremation of the ancients. The most complete review of these customs is said to be furnished by Biondelli.* Burning is practised by the Hindoos, Siamese, Japanese, Chinese, Tartars and others.

II.—INTRA-MURAL INTERMENT.

That the evils arising from interment are chiefly due to the Christian system of intra-mural sepulture is perfectly evident; for the nearer the abodes of the living and of the dead are brought together, the more likely are the latter to contaminate the air and water used by the former. So glaring have the pernicious effects of this system become, that, in nearly all of the large cities of Europe and America, spacious rural cemeteries have taken the place of the old, crowded, intra-mural churchyards. The change, however, has not yet become universal, and, as some of the old graveyards in populous districts are still in use in Massachusetts, we will briefly review the history of the intra-mural system.

Among the ancients, burial within cities was seldom practised. It was forbidden by the Roman law, and among the Greeks was only practised by the Lacedemonians, who were taught by Lycurgus to bury in the city and erect monuments, to familiarize the youth with the spectacle of death, and that they might remember and emulate the heroic deeds of their fathers. The Jews buried in caves and fields, remote from dwellings, and the Egyptians in catacombs and pyramids. To the inhabitants of Syracuse, in Sicily, the custom of extra-mural interment once proved of the greatest practical value. When the city was besieged by the army of

* La Cremazione dei Cadaveri. Milan. 1874.

Hannibal, the enemy, in order to build a wall to command the city, destroyed the tombs used by a city of 200,000 inhabitants. The bodies were scattered about the plain and gave rise to a frightful epidemic, which carried off Hannibal and great numbers of his followers.

The primitive Christians of Rome buried in catacombs, subterranean passages excavated for the purpose in the hills around the city. There were, in the third century, 25 or 26 of these, corresponding with the number of parishes within the city, and measuring, in the aggregate, about 350 miles in length. They were frequented as shrines till the translation of relics to the churches, A. D. 750, when they became neglected and forgotten, remaining in oblivion for nearly seven and a half centuries, till rediscovered in 1578.

As Christianity spread, the desire of the faithful to be buried within the hallowed precincts of the churches, produced occasional infractions of the Roman law against burial in cities. To the Emperor Constantine the privilege of being buried in the vestibule of the Church of the Apostles, at Constantinople, was accorded as the crowning honor of his career. For many years this privilege was only permitted to persons of the greatest fame, piety or wealth, the last securing it by splendid gifts to the church. The Emperor Theodosius, in the year 381, forbade interment in cities, and ordered the removal of the remains to prevent infection. This law was soon enforced throughout the Roman empire, and was subsequently embodied in the Justinian code. No cemetery was permitted in or near the city of Rome until the year 509, when Pope Marcellus obtained permission from the senate to found the first Christian cemetery in Rome. From this time burial in churches became more and more common, superstition overcoming all sanitary considerations, until the condition of the churches became a crying evil. To priests was accorded the right of burial in the choir, to monks in the galleries of the convents, and the founder of a church was allowed to be buried in the holy place. Under Charlemagne, Theodolphus, bishop of Orleans, found the churches almost converted into catacombs, and became convinced that, unless this use of them were discontinued, they would have to be relinquished as places of worship. He had

the tombs destroyed, and made a regulation that neither priest nor layman should be buried in a church unless distinguished for holiness of life. In 787, Charlemagne deprived laymen of the privilege of burial in churches, and afterwards made the law apply to all persons indiscriminately. From the eighth to the eighteenth century, however, there was a constant tendency to relaxation of discipline in this regard, men thinking by burial in sacred soil to atone for the wickedness of their lives. The decrees of a score of ecclesiastical councils were issued against this pernicious system, but without any permanent effect. In the ninth century the council of Arles permitted interment in churches to ecclesiastics and laymen of the highest distinction; and that of Nantes allowed tombs and monuments only in the vestibules and porches of churches. The council of Tribur exhorted the nobles to rest satisfied with burial in the vicinity of cathedrals or convents, and not to desire to lie within the walls. But, despite all efforts to the contrary, the custom of burial in and about churches became, during the middle ages, firmly established. Those who could not be buried in the church itself were deposited in the enclosure about it, resting, if not before the shrine of their patron saint, at least in the shadow of the sacred edifice.

Thus originated the Christian churchyard, often a contracted plot of ground in the midst of dwellings, literally packed with bodies until it became impossible to dig a grave without disturbing human bones; and the earth so saturated with foul fluids, and the emanations so noxious, as to make each churchyard a focus of disease.

In the eighteenth century the attention of the medical profession was drawn to the magnitude of this evil, and governments were induced to take some active measures for reform. The lead was taken by Austria, interments in the city of Vienna being forbidden during the reign of Maria Theresa—about 1730.* Shortly after, an agitation of the subject was commenced in France, by Haguénot,† a physician of Montpellier, who described a frightful case in which three men

* For the titles of numerous German and Dutch works upon intra-mural interment, see the bibliography at the close of this paper.

† *Mémoire sur le Danger des Inhumations dans les Eglises.* Montpellier. 1748.

died, and two others narrowly escaped death, from entering a freshly-dug grave in the parish churchyard in that city, on the 17th of August, 1744. He was followed by Drs. Maret,* of Dijon, in 1773, and Navier,† of Chalons, in 1775, showing the evils of burial in crowded churchyards. In 1765, the parliament of Paris issued a decree requiring all churchyards in that city to be closed, and to remain unoccupied for five years, or longer if thought necessary by proper officers and physicians. Eight cemeteries were to be established at a distance from the city, the graves not to be marked by stones, but all epitaphs and inscriptions to be placed on the stone walls, eight feet high, enclosing the grounds. Each cemetery was to have a place of deposit in the city, whence bodies were to be removed at 2 A. M. in summer and 4 A. M. in winter. Louis XV. concurred in the prohibition of graveyards in Paris, and granted to the parish of St. Louis, at Versailles, 3,600 square feet of ground in the forest of Sartori, as a cemetery. Louis XVI., in March, 1776, prohibited graveyards in cities, towns, chapels and cloisters, on sanitary grounds; but made an exception in favor of the clergy, lords and patrons of churches, who were allowed to be buried under vaults covering a space of seventy-two square feet, built of stone and flagged, the bodies being placed six feet under the lower pavement.

In 1785 a general disinterment was commenced in Paris, the bodies being removed from the various cemeteries and transferred to the catacombs,—subterranean galleries under the northern part of the city, somewhat similar to those of Rome, except that the latter were without the city and constructed especially for purposes of burial, while the former are within the city and are merely disused quarries. The disinterment was begun in the cemetery of the Innocents, which had been in use for three centuries. The neighborhood had become very unhealthy and the air extremely offensive. Candles would not burn in the cellars of adjacent houses. Although the exhumation was performed in

* *Mémoire sur l'Usage où l'on est d'enterrer les Morts dans les Eglises et dans l'Encinte des Villes.* Dijon. 1773.

† *Reflexions sur les Dangers des Exhumations précipitées, et sur les Abus des Inhumations dans les Eglises; suivies d'Observations sur les Plantations d'Arbres dans les Cimetières.* Amsterdam and Paris. 1776.

winter, a number of grave-diggers were killed on the spot by the poisonous gases. Several years before, the neighbors had begun to complain of the offensiveness of this cemetery. Since the removal of the bodies from this place, the vicinity has become very healthy.

In 1790, the National Assembly passed a law commanding all towns and villages to discontinue the use of their old burial-places, and to form others at a distance from their habitations; and, in 1804, an imperial decree was issued, ordering high ground to be chosen for cemeteries, and every corpse to be interred at a depth of at least five or six feet.

In 1805, was published a work by Vicq d'Azyr,* showing the evils of intra-mural burials. This was chiefly a translation from the Italian of Scipion Piattoli, who had, in his turn, drawn upon the French authors already mentioned.

Since the discontinuance of the old cemeteries, Paris has made use of the four suburban cemeteries of Père la Chaise, Montparnasse, Montmartre and Vaugirard, which have, since they were opened, received in the aggregate a million and a half of bodies. Besides being overcrowded, these have, with the spread of the city, become also intra-mural, and it has become necessary, during the past year, to establish a new rural cemetery at Méry sur Oise, twelve miles from the city.

The example of France in abolishing intra-mural cemeteries was soon followed in the United States, our country preceding England in this reform. In 1806, a report of the New York Board of Health, by Miller, Pintard and Van Zandt,† advised the removal of all graveyards from the city, and suggested that the present burial-places be made public parks. As a result of this report, a law was passed authorizing the corporation to prohibit interment in the city; but this law soon became a dead letter, and was not enforced until the publications of Dr. F. D. Allen,‡ in 1822, and Dr. Felix Pascalis,§ in the following year, had awakened a new and lively interest in the subject. Among the instances of the

* *Essai sur les Lieux et les Dangers des Sépultures. Oeuvres de Vicq d'Azyr* Vol. VI., 1805.

† *On Interments within the Populous Parts of the City of New York.* 1806.

‡ *Documents and Facts, Showing the Fatal Effects of Interments in Populous Cities.* New York, 1822.

§ *An Exposition of the Dangers of Interment in Cities.* New York, 1823.

injurious effect of cemeteries cited in the first-named paper, was the following:—In 1814, a battalion of militia was stationed on a lot on Broadway, the rear of which bounded on Potter's-field, from whence arose a most deadly effluvium. A number of soldiers were attacked with diarrhœa and fever. They were removed at once; one of the sick died, and the others rapidly recovered.

In a letter from Dr. Joseph Akerly, embodied in the same paper, the writer expressed the belief that Trinity churchyard had been an active cause of the yellow fever in New York in 1822, aggravating the malignity of the epidemic in its vicinity. This church was built in 1698, and the ground had been receiving the dead for one hundred and twenty-four years. Sometimes bodies were buried only eighteen inches below the surface, and it was impossible to dig without disturbing the remains. During the Revolutionary War, this burial-ground had emitted pestilential odors, and, in 1781, Hessian soldiers were employed to cover the ground with a layer of earth, two or three feet in depth. This ground was unusually offensive in 1822, and annoyed passengers on the surrounding streets, previous to the appearance of the yellow fever, in July. During the epidemic, the condition of this churchyard, and the virulence of the disease in its vicinity, called for some active measures, and, on the night of September 22, Dr. Roosa covered the ground with fifty-two casks of quicklime, the stench being at the time so excessive as to cause several laborers to vomit. On the 25th and 26th of the month, St. Paul's churchyard, and the vaults of the North Dutch church, in William Street, received the same treatment, these being likewise very offensive and foci of epidemics.

The city of Boston, in 1850, passed an ordinance, providing that no graves should be dug in any burying-ground of the city, except at East or South Boston, unless by permission. It was also required that no grave should be less than three feet deep from the surface of the ground to the top of the coffin. Copp's Hill cemetery was, at this time, overcrowded, and the tombs were filled to the very threshold.

At Chicago, the old cemetery within the city has been discontinued for public burials since 1864; but private burials there still continue. Dr. Rauch, in a pamphlet published in

1866,* maintained that this cemetery, placed near the shore, contributed to the contamination of the water-supply of the city. The completion of the lake tunnel, however, must completely remedy this evil.

During epidemics of yellow fever and cholera, the pernicious influence of intra-mural interments in this country has been the most striking. Several instances are cited by Dr. Rauch. One of these was the epidemic at New Orleans in 1853, concerning which Dr. E. H. Barton reported that, in the fourth district, the mortality was 452 per thousand, more than double that of any other. In this district existed three extensive cemeteries, in which were buried, the previous year, more than three thousand bodies. In other districts, the proximity of cemeteries seemed to aggravate the disease. The Sanitary Commission unanimously recommended that "the present cemeteries, within the city limits, should all be closed against future use." This recommendation has never been complied with, however, the old system still prevailing of burying in tombs above the surface of the ground, in graveyards in the midst of the city, only sequestered by high brick walls.

Another instance was the epidemic at Norfolk and Portsmouth, in 1855, reported by Dr. Bryant. Here forty-five per cent. of the population died. Nearly all interments were made in the city, where the water-level is only six feet below the surface. The average depth of graves was about four feet, and, in many of them, three bodies were placed one upon the other. These cemeteries were considered by Dr. Bryant a fruitful source of disease.

A third instance was observed by Dr. Rauch himself, during the epidemic of cholera in Burlington, Iowa, in 1850. No deaths occurred in the neighborhood of the city cemetery until about twenty interments had been made there, and then cases began to occur, and always in the direction from the cemetery in which the wind blew.

Throughout the United States, large and attractive rural cemeteries have very generally superseded the old graveyards within city limits. Of these, Mount Auburn was the first, having been established in 1831. Laurel Hill was opened

* Intra-mural Interments in Populous Cities. Chicago, 1866.

soon after, and Greenwood in 1842. Within a few years, Chicago has acquired three rural cemeteries, and the number of such, in all parts of the Union, is rapidly multiplying.

England has been behind every other country in recognizing the evil of intra-mural interments and in applying the remedy. This is still more remarkable, in view of the fact that one of the earliest, if not the very first, published protest against burial in cities emanated from an English pen, being an anonymous pamphlet published in London in 1721, and entitled, "Seasonable Considerations on the Indecent and Dangerous Custom of Burying in Churches and Churchyards." This was prior to both the German and the French agitation of the subject, and led to no practical result at the time, unless, indeed, it may have led the way to the abolition of intra-mural interments in Dublin, which occurred in 1740. At that time a fatal epidemic of fever was distinctly traced to exhalations from the churchyards, and these were ordered to be removed out of the city. But this case was an isolated one.

The plan of Sir Christopher Wren for the rebuilding of London proposed to exclude all dark, narrow alleys and courts, and provided that not only "all churchyards," but "all trades that use great fires or yield noisome smells be placed out of town." This plan was not adopted.

But finally the condition of churchyards in London became so bad, that further neglect was impossible. In 1839, Mr. George A. Walker, a London surgeon, published a volume entitled, "Gatherings from Graveyards, especially those of London." This volume excited so much interest, that at last Parliament was induced to appoint a committee, who, in their report, dated June 14, 1842, demonstrated the great evils of intra-mural interment, quoted the testimony of medical men, and recommended a law forbidding the interment of bodies within the city, except in a few specified cases. The condition of the London cemeteries was, in this report, very thoroughly exposed. Public graves were dug, to contain thirty or forty bodies, piled to within a foot or two of the surface, and left open until full; in digging graves, great quantities of bones were exhumed, which were thrown together in a common vault; the soil was saturated with putrid

fluids, and exhaled the most offensive odors. It was the general testimony of physicians that typhus and other fevers were especially prevalent in the immediate vicinity of these grounds.

Notwithstanding the convincing nature of this report, it was eight years before any action was taken.

In 1843, Edwin Chadwick presented to the Home Department "A Supplementary Report on the Results of a Special Inquiry into the Practice of Interment in Towns." The report was printed and extensively distributed by the government throughout the kingdom. It constitutes probably the best work extant upon the subject of intra-mural sepulture, containing a remarkable mass of information concerning burial-places, both in England and in other countries.

In regard to the effect of burial-grounds upon well-water, he quotes Professor Brande as stating that he has "frequently found the well-water of London contaminated by organic matters and ammoniacal salts," and as referring to one instance of a well near a churchyard, "the water of which had not only acquired odor but color from the soil." Professor Brande also stated that "very many of these wells are adjacent to churchyards, the accumulating soil of which has been so heaped up by the succession of dead bodies and coffins, and the products of their decomposition, as to form a filtering apparatus by which all superficial springs must of course be more or less affected"; but he admitted the difficulty of distinguishing, by chemical analysis, whether contamination of water is due to cesspools, cemeteries or leakage from gas-pipes.

The condition of the London graveyards is thus described: "In the metropolis, on spaces of ground which do not exceed 203 acres, closely surrounded by the abodes of the living, layer upon layer, each consisting of a population numerically equivalent to a large army of 20,000 adults, and nearly 30,000 youths and children, is every year imperfectly interred. Within the period of the existence of the present generation, upwards of a million of dead must have been interred in these same spaces."

Chadwick deduces from the sum of the evidence upon the subject the conclusion, "that, inasmuch as there appear to be

no cases in which the emanations from human remains in an advanced stage of decomposition are not of a deleterious nature, so there is no case in which the liability to danger should be incurred, either by interment or by entombment in vaults, which is the most dangerous, amidst the dwellings of the living,—it being established, as a general conclusion, in respect to the physical circumstances of interment, from which no adequate grounds of exception have been established, that all interments in towns, where bodies decompose, contribute to the mass of atmospheric impurity, which is injurious to the public health."

In 1845, was formed "The National Society for the Abolition of Burial in Towns." The address of the society stated that "it may be demonstrated that an acre of earth is capable of affording decent interment every year to one hundred and thirty-six bodies, or thereabouts. In many of the parochial and other burial-grounds, each acre of land is compelled to receive annually more than one thousand bodies; some even two or three thousand, every year." The address called for "a decided expression of public opinion," and was distributed, in circular form, throughout the kingdom.

In 1850, a "Report on a General Scheme for Extra-mural Sepulture" was presented to both houses of Parliament by Carlisle, Ashley, Edwin Chadwick and T. Southwood Smith, showing the results of investigations made during the prevalence of cholera in London, when the pernicious influence of the graveyards was more than ever apparent.

Dr. Sutherland testified that he had witnessed several outbreaks of cholera in the vicinity of graveyards, which left no doubt on his mind as to the connection between the disease and such local influences; and that it is only when some epidemic comes that the consequence of long antecedent neglect becomes so apparent as to rivet attention and excite alarm.

The report contains an account of a large number of London churchyards, and also of the vaults of the various churches, showing their bad condition, and the remarkable prevalence and virulence of the cholera in their vicinity.

In the following year,—namely, in April, 1851,—still another report was made to Parliament, entitled "Report on

a General Scheme of Extra-mural Sepulture for Country Towns," signed by Carlisle, Ashley and Southwood Smith which this statement is made :—

"From these inquiries, it appears that, in country towns in general, small and confined spaces of ground have been used for burial, for centuries; that interments, in undiminished and even increasing numbers, continue to be made on these grounds long after they have been declared, by competent authorities, to be not only full but overcrowded; that commonly these burial-grounds are in the midst of the habitations of the living, and often are closely surrounded by dense populations, and that the exhalations arising from them are prejudicial to the public health."

The effect of these several reports was so convincing, that a change was at last brought about by legislative enactments.*

III. INTERMENT AT THE PRESENT DAY.

At the present day, the condition of the cemeteries in Europe and America is, as a rule, far different from that which has been described as formerly existing. Cemeteries are generally without the limits of towns, and more spacious than formerly. Care is also taken to select high ground and a porous soil; and, where it is necessary to make use of clay soil, it is customary in England to underdrain it to a depth of eight feet. Regulations have been adopted as to the depth of graves, distance from dwellings and wells, etc. The depth of graves prescribed by law in France is from 4 feet 6 inches to 6 feet; in Munich, 6 feet 7 inches; in Frankfurt, 5 feet 7 inches; in Stuttgart, for persons under eight years of age, 3 feet 9 inches; eight to ten years, 4 feet 7 inches; ten to fourteen years, 5 feet 7 inches; and upwards, 6 feet 7 inches. In this country the depth varies from 4 to 6 feet. The space allowed to each grave is, in England, four superficial yards, and about the same at Stuttgart and Munich; in Wurtemberg it is 54 feet, and in some parts of Austria, 60 feet. In England, it is customary to allow a quarter of an acre of ground to each 1,000 inhabitants.

* See Report of Royal Sanitary Commission, 1871. Abstract of English Law relative to Burials.

In Italy, no well is allowed to be sunk within one hundred yards of any cemetery, and double this distance is required in France and Austria. This is called the "protective distance," but has, in some cases, been thought to be too small. The Hygienic Council at Brussels, in 1852, decided that a distance of four hundred yards was protective; but even this distance has been sometimes conceived to be inadequate. In Prussia, no cemetery may be located within five hundred paces of any dwelling. At Stralsund, in Prussia, the distance required is one thousand paces.

At Frankfort and Munich, in addition to the strict rules regarding burial, houses of reception have been made use of since 1829, as safeguards against premature burial, the bodies, while lying in them, being subjected to frequent inspections, and also connected with wires, so that the slightest movement will ring an alarm-bell. No body can be removed for burial without a physician's certificate that decomposition has commenced.

In England, the following "Regulations for Burial-grounds" are now in force:—

1. The burial-ground shall be effectually fenced, and, if necessary, underdrained to such a depth as will prevent water remaining in any grave or vault.

2. The area to be used for graves shall be divided into grave-spaces, to be designated by convenient marks, so that the position of each may be readily determined, and a corresponding plan kept on which each grave-space shall be shown.

3. The grave-spaces for the burial of persons above 12 years of age shall be at least 9 feet by 4 feet, and those for the burial of children under 12 years of age, 6 feet by 3 feet, or, if preferred, half the measurement of the adult grave-spaces, namely, $4\frac{1}{2}$ feet by 4 feet.

4. A register of graves shall be kept, in which the name, age and date of burial in each shall be duly registered.

5. No body shall be buried in any vault or walled grave, unless the coffin be separately entombed in an air-tight manner; that is, by properly-cemented stone or brick work, which shall never be disturbed.

6. One body only shall be buried in a grave at one time, unless the bodies be those of members of the same family.

7. No unwallled grave shall be reopened within fourteen years after the burial of a person above twelve years of age, unless to bury another member of the same family, in which case a layer of earth not less than one foot thick shall be left undisturbed above the previously-buried coffin; but if, on reopening any grave, the soil be found to be offensive, such soil shall not be disturbed; and in no case shall human remains be removed from the grave.

8. No coffin shall be buried in any unwallled grave within four feet of the ordinary level of the ground, unless it contain the body of a child under twelve years, when it shall not be less than three feet below that level.

The English burial-grounds are under the general supervision of a superintendent of burials.

In this country, the regulations are generally less explicit. In Massachusetts, burial-grounds may be regulated by boards of health.*

By the last annual report of Mt. Auburn cemetery, it appears that, up to the 31st of December, 1873, there had been made 18,646 interments, or about 177 per acre of the portion in use. These bodies have been accumulating during a space of 43 years. Last year, there were 513 interments, or about five per acre. This is a very different state of things from that which existed in the parochial grounds of London, thirty years ago. A dozen of the most crowded of these averaged from 1,204 to 2,323 per acre.

From what has preceded, it is evident that a great change has taken place, during the last century, in the burial customs of civilized nations. Intra-mural interments have been very generally abolished, and cemeteries are managed with a view to the public health. In searching for cases of recent date of disease resulting from graveyard infection, we find that such are almost unknown to medical literature. The only marked European case which we have yet discovered, is that mentioned by Pietra Santa, of the villages of Rotendella and Bollita, in Italy. The cemeteries of these villages were at the summit of a wooded hill at a considerable distance from the houses. The springs from which water was obtained were at the foot of the hill, and ultimately the

* General Statutes, chap. 28, §§ 4-11.

water became highly contaminated. A severe epidemic, which recently visited these villages, was ascribed to the use of this impure water. A similar case occurred during the past year, in Barbary, as an incident of the plague which has recently visited that country. The people of a certain village lived in excavations in rocks, getting their water-supply from wells into which water had run from the cemetery where bodies were covered only a foot deep with gravel. Those only who drank of this impure water were attacked with the plague.*

In April and May, 1874, there was an unusual amount of sickness, including cases of scarlet fever and diarrhœa, in the neighborhood of the Battersea cemetery, in London; and this was popularly attributed to the overcrowded, and, therefore, insanitary, condition of the burial-ground, although the relation of cause and effect cannot be considered as proved. It does not appear whether or not wells were used in this vicinity.†

While reported cases of disease presumably dependent upon the nuisance of graveyards are extremely rare, cases where water has been known to be polluted from this source, even though its use was followed by no ill-results, are scarcely less so. The following examples of such pollution have, however, been recently reported.

Pietra Santa‡ is responsible for the statement that, at the meeting held at Milan on the 6th of April last, Dr. Polli, to prove that inhumation taints air and water, referred to certain researches of Prof. Selmi, of Mantua, and to the chemical analyses of the waters of Milan by Profs. Parvesi and Rontondi.

Mr. Eassie§ states that M. Ducamp discovered in Paris, not long ago, a well, the water of which, entirely derived from cemeteries, had acquired a sulphur-like taste, so that people purchased it as mineral water!

Reclam|| furnishes the following case: "In the last remarkable report of the Faculty of Medicine of Saxe, Reinhard

* "British Med. Journal," August 22, 1874.

† "Med. Times and Gazette," November 21, 1874, p. 579.

‡ "Annales d'Hygiène Publique," July, 1874.

§ "British Med. Journal," August 1, 1874.

|| "Gaz. Méd. de Paris," May 23 1874. Translated in "Chicago Med. Ex.," August 1, 1874.

relates that nine large and several smaller victims of the cattle-plague were interred at Dresden, at a depth of ten or twelve feet. It was found, the next year, that the water from a well situate one hundred feet from the pit in which they were buried had a fetid odor and contained butyrate of lime. At a distance of twenty feet, it had the disgusting taste of butyric acid, and each quart contained about thirty grains of this substance. The bodies were subsequently disinterred and burned."

An example of air contaminated by a cemetery may be found, according to the daily papers of recent date, in Greenwood cemetery, which is said to have become, from this cause, a nuisance to the inhabitants of South Brooklyn.

Mr. Eassie* relates a case in which a cemetery became a public nuisance by the bursting of a reservoir at Herren-lauersitz, in 1854. The cemetery was thus washed away, and upwards of one hundred bodies were floated into gardens, houses and harvest-fields, whence they were not wholly removed until a fortnight after.

The only extended and minute investigations of water from wells situated in or near cemeteries that have been published, are, so far as we are aware, those of Prof. Fleck,† of Dresden. That city possesses ten cemeteries, two within the city, the others on the outskirts. Water from wells situated in nine of these was carefully analyzed by Prof. Fleck, between June and November, 1872, with the results shown in the annexed table.

* Loc. cit.

† Jahresbericht der chemischen Centralstelle für öffentliche Gesundheitspflege, in Dresden, 1873, p. 49. Investigation into the condition of the well-water in the Cemeteries of Dresden. For a translation of this paper, we are indebted to Prof. W. R. Nichols, of the Mass. Institute of Technology.

TABLE I.—*Fleck's Examinations of Well-water from Dresden Cemeteries.*

Number.	Parts per 100,000.	Residue from Evap- oration.	Reduced silver.	Ammonia.	Lime.	Magnesia.	Nitric acid.	Sulphuric acid.	Chlorine.	Carbonic acid by volume.	Depth of well, in meters.	Height of water, in meters.	Temperature of wa- ter.*	Nearest grave, dis- tant, in meters.	When last used.	Nearest grave, dis- tant, in meters.	Newest grave, when used.
1	Trinity Cemetery,	27.38	.40	.080	7.26	1.14	3.30	6.42	1.41	-	8.0	1.00	9.9	2.1	1867	4	1869
2	" "	28.34	.92	.065	6.92	1.59	3.90	4.51	.96	-	9.7	1.00	10.0	1.4	1869	-	-
3	" "	33.96	.60	-	6.92	1.80	4.20	6.55	1.42	-	9.7	1.00	9.9	2.0	?	-	-
4	" "	28.86	1.40	-	7.20	1.80	2.60	5.38	1.13	-	10.65	2.00	10.0	1.5	1871	-	-
5	Trinity Cemetery, near the dwelling-house,	33.44	1.04	-	6.42	2.05	5.10	7.65	1.40	-	8.5	1.30	10.8	10-12	1861-64	†	-
6	Elisas Cemetery,	89.73	.94	-	16.95	4.44	20.25	15.35	6.35	-	6.7	1.20	10.0	1.6	1860	10	1868
7	Anna Cemetery,	37.83	4.53	.055	13.51	1.80	3.00	4.10	1.92	76.5	16.5	3.00	10.8	6.0	1858	10	1868
8	Anna Cemetery, near the grave-digger's house,	65.47	3.87	.067	21.53	2.67	12.06	19.33	3.11	97.8	14.5	3.00	10.5	2.5	1872	-	-
9	Anna Cemetery,	52.57	4.91	-	18.65	1.06	8.22	10.33	1.69	75.2	-	-	10.5	1.5	1847	3	1866
10	Old Anna Cemetery,	87.27	6.22	.090	17.26	4.97	17.20	22.67	7.42	103.2	-	-	10.5	2.5	1870	-	-
11	Catholic Cemetery, in	70.50	5.19	.075	12.58	3.81	19.02	15.82	7.47	69.7	8.6	2.00	11.0	2.5	1865	3	1871
12	Friedrichstadt,	73.73	4.25	.101	13.93	3.70	19.02	16.55	6.31	66.5	7.5	2.00	10.5	3.0	1860	-	-
13	Evangelical Cemetery,	70.00	5.47	.067	11.50	4.26	18.82	16.95	5.97	64.3	7.6	1.30	10.5	3.0	1865-62	6	1871
14	New Friedrichstadt Cemetery,	34.40	5.09	.100	9.86	2.10	8.70	9.91	2.30	43.3	9.0	9.93	10.5	1.0	1869	3	1871
15	Cemetery,	44.70	5.40	.139	11.43	3.72	7.10	12.12	2.40	16.0	8.8	1.00	10.0	4.0	1872	-	-
16	Neustadt Cemetery,	43.10	5.38	.092	8.49	2.87	11.20	10.51	1.99	24.5	8.0	1.00	9.0	1.0	1846	3	1869
17	" "	37.30	5.34	.092	7.28	2.45	9.90	6.72	3.01	37.0	7.2	1.30	9.7	1.5	1854	2, 5, 3	1871
18	" "	34.20	5.84	.123	7.28	2.46	8.70	9.66	1.79	24.1	7.7	1.30	8.5	30.0	1866	-	-
19	Haller Cemetery,	7.70	4.87	.115	.62	-	-	-	-	32.1	14.1	1.00	9.5	2.5	1869	-	-
20	" "	11.20	5.62	.192	2.44	-	-	-	-	60.5	13.75	1.30	9.0	1.0	1864	-	-
21	" "	9.90	5.34	.123	1.84	-	-	-	-	48.2	9.3	1.30	9.5	-	-	-	-
22	" "	26.80	5.09	.108	4.54	-	14.10	-	.41	-	-	-	10.0	18.0	1866-71	-	-

* In degrees (centigrade) above zero.

† Twenty-two meters outside the Cemetery.

Concerning these analyses, Prof. Fleck remarks as follows:—

"In general, there is little agreement in composition among the well-waters from the different cemeteries in Dresden, and it seems evident that the greatest influence is exerted, not by the proximity and age of the graves so much as by the character of the ground. With the exception of the water from the Trinity and the Elias cemeteries (in which cases the wells are situated in clean coarse gravel), the amount of organic matter is very considerable. This is the case to a marked degree in the well-waters of the oldest cemeteries,—the Anna cemetery (Annenkirchhof), the Catholic cemetery in the Friedrichstadt, and the old Evangelical cemetery,—where, besides notable quantities of nitrates, there was found a very considerable amount of unoxidized organic matter. In the Heller cemetery, which lies in clean sand on the right bank of the Elbe, the amount of nitric acid is very small; but the amount of ammonia and that of organic matter are quite large. These differences can be explained only by taking into account, in addition to the influence exerted by the character of the soil, also the effect of the ground-water itself. A ground-water at a great depth, moving slowly, that is to say, flowing with a slight fall, will dilute the matter dissolved from the soil less, and will afford a concentrated solution containing a larger proportion of organic matter than a ground-water flowing rapidly; and since, in the Trinity cemetery, the ground slopes somewhat rapidly towards the Elbe, we may infer that the motion of the ground-water is also somewhat rapid. This condition of things gives us as a product a water which is poor in decomposed and undecomposed organic matter; that is to say, a nearly pure water in spite of the greater amount of lime salts originally contained in the ground-water. In no other one of the cemeteries are the conditions so favorable as in the Trinity; and in the case of the Anna cemetery (Annenkirchhof), where we should expect a rapidly moving ground-water on account of the declivity of the surface, there is lacking, in the neighborhood of the wells, the porous material necessary to bring about a rapid decomposition of the contents of the graves.

"Further investigations of the waters of the Dresden cemeteries are projected for the year 1873. Meantime, however, it may even now be stated as the result of experience, that the best locality for a cemetery is on a porous, coarse-grained, gravelly soil, with rapidly moving ground-water; that is to say, situated on a declivity. In such a situation, the processes of decay go on rapidly, and consequently it is possible to renew the graves in a comparatively short time.

Of injurious physiological effects arising from the use of the water of the cemeteries of Dresden, there is no proof, as far as the author's knowledge extends. Moreover, it should, on the other hand, be mentioned that in each cemetery the well which is situated nearest to the grave-digger's house is used without regard to its quality by the grave-digger and his family, and up to the present time there has been no cause whatever for forbidding the use of the well.

"But, indeed, the composition of the cemetery-water does not differ essentially from that of the average well-waters of Dresden in respect to the decomposing organic matter, as may be seen by comparing with the above results the following determinations of the character of the water from various wells within the city:—

Number.	To 100,000 Parts,	Solid residue.	Reduced alver.	Nitric acid.	Ammonia.
1	Right bank of Elbe,	31.4	9.7	6.0	—
2		11.9	6.2	—	—
3		38.4	6.4	23.4	—
4		12.0	13.6	1.9	.20
5		12.5	9.4	2.5	—
6		28.2	4.4	1.8	—
7		91.4	6.4	18.6	.12
8		105.4	6.5	23.3	.14
9	Left bank,	82.6	3.2	19.4	.06
10		67.7	6.0	17.2	—
11		140.9	20.4	22.7	—
12		28.3	7.6	25.0	—
13		40.2	4.9	10.4	.05
14		80.3	11.2	13.3	—
15		89.6	6.4	25.0	—
16		31.9	10.8	6.9	.17
17		60.0	15.8	14.8	.20

The analyses were repeated in 1873 with very similar results; and, from the result of the two years' investigations, Fleck draws the following deductions:—

"That neither the period of interment nor the closeness of the graves directly exerted a marked influence upon the contents of wells, is proved by the fact that while in the water of the wells lying nearest to the graves little or no decomposed material was found, this appeared most abundant in the water of the well outside of the Trinity churchyard.

"The proportions of nitric acid and ammonia have remained very nearly the same during the past two years in the wells of nearly all of the Dresden churchyards; and it is ascertained that the wells of the oldest and of those which, being nearest the dwelling of the grave-digger, are most liable to be contaminated with house refuse, contain the largest proportion of nitric acid. Nevertheless the abundance of this ingredient, although amounting in the two oldest of the churchyards to between 0.188 and 0.190 gramme per litre, is surpassed by the amount contained in other wells of Dresden. The following table shows the results of the analyses of such wells in October, 1872:—

Well of Botanic Garden,	0.189	gramme	nitric acid.
" " Wienerstrasse,	No. 23—0.227	"	" "
" " Struvestrasse,	" 15—0.233	"	" "
" " Forststrasse,	" 15—0.234	"	" "
" " Dippoldiswalder Gasse, "	1—0.250	"	" "
" " Ziegelstrasse,	" 20—0.250	"	" "

"This fact, which is of great importance in determining the influence of churchyards upon their surroundings, should not be too lightly considered.

"It is therefore established that the nitric acid in well-water is produced by the decay of the organic and nitrogenous elements of the soil; and, moreover, the proportion of nitric acid contained justifies the conclusion that the more nitric acid the water contains, the more soluble organic materials are there in the earth. The results, then, of the observations of churchyard wells prove that either the soil of the oldest churchyards yields to rain-water but little soluble organic material, or that the process of decay proceeds so slowly that from a cesspool, or badly constructed house-vault, as well as from sewers and drains, more organic decomposing and putrefying material is, in the course of a year, conveyed to the ground-water than from the graves of the most crowded churchyard."

With a view of ascertaining the experience of the medical profession as to the influence of cemeteries, as at present managed, upon the public health, a circular containing several questions has, during the past summer, been addressed to nearly five hundred physicians.

These circulars were sent to three hundred regular correspondents of the State Board of Health, one in each city and town of Massachusetts, to forty physicians of Boston, to forty of New York, to about seventy scattered throughout the United States, and to thirty in England, Scotland and Ireland. Such physicians were selected for correspondents as were supposed to take some special interest in sanitary subjects.

To these circulars, one hundred and seventy-one answers have been received; namely, one hundred and thirty-three from this State, thirty-two from other States, and six from England and Ireland.*

An analysis of the answers has been made, with the following results:—

QUESTION I.—*Have you observed any instances in which sickness appeared to be induced or aggravated by the proximity of dwellings to cemeteries? If so, please cite cases.*

The answers are as follows:

	Mass.	Other States.	Eng. and Ireland.
Yes, . . .	5	3	3
No, . . .	126	29	1
No reply, . .	2	—	2
	<hr/> 133	<hr/> 32	<hr/> 6

* A few others were received too late to be included in this analysis.

QUESTION II.—*In such cases, have you attributed such sickness to poisoned wells or foul air, or both?*

Answers :—Air,	3
Water,	4
Both,	4
Total,	<hr/> 11

It is evident that the second question can be answered only by those who reply to the first in the affirmative.

Of the one hundred and seventy-one correspondents who reply to these circulars, therefore, eleven have observed sickness resulting from this cause; three attributing it to foul air, four to poisoned wells, and four to both causes combined. The remaining one hundred and sixty-one have never observed any such phenomena. Of the three hundred correspondents who have made no reply, it may be assumed that the fact of their not answering is, to a certain extent, an indication that cases of this kind have not come under their notice.

Affirmative answers were received from the five following towns in Massachusetts :—

1. *Wakefield*.—Yes; some years ago. Old Marine Hospital burying-ground. Foul air.

2. *Groveland*.—(Referred to later.)

3. *Lenox*.—1. In a few houses in the immediate vicinity of the Lenox cemetery, I have known of more sickness than in any other part of the village. These houses are all well-built and well-ventilated. The ground on which they stand is better drained than some other parts of the village, and I have not known of any accumulation of refuse near any of them; but they are near the foot of the hill on which the cemetery is located; the bottoms of the graves are on a much higher plane than the bases of the houses, and the natural drainage of the cemetery is in their direction.

2. I attribute the sickness in most of these cases, and in some others, to poisoned wells rather than to foul air. It is very possible, however, that the same water which poisons the wells may, in percolating through the soil, give rise to malarious emanations.

4. *Canton*.—In one case, seen years ago, fevers were apparently caused by the relative position of a well and a private burial-place; but the removal of families prevents the obtaining of facts.

5. *North Prescott*.—(Referred to later.)

From outside of Massachusetts, we have four answers in the affirmative.

6. DR. HENRY B. BAKER, *Secretary Michigan State Board of Health, Lansing, Mich.*—In examining into a case of cerebro-spinal meningitis, I found a village on the site of an old Indian burial-ground, and a present cemetery within village limits. Analysis of the well and spring water, by Prof. Kedzie, revealed evidences of contamination with organic remains. It is possible that the water had something to do with the epidemic.

9. DR. JAMES HENRY KENNET, *London, Eng.*—1. Twenty-four years ago I conducted an investigation into the health-influence of a crowded London cemetery on the site of the surrounding population. It was the cemetery of St. George's Parish, Hanover Square, situated on one side of Hyde Park, originally in the country, but now surrounded by houses. The information then obtained, by house-to-house visitation, led me and a committee of medical men to conclude that the proximity of this cemetery was most detrimental to the health and well-being of the surrounding neighborhood.

Our report was drawn up in conformity with this conclusion and presented to the proper authorities. It led to the closing of the cemetery within a few months, and no doubt contributed, as far as it went, to decide the general question of intra-mural interment. As you are probably aware, such interment has not been allowed for many years in London.

2. In the above case, as there were no wells in use, to my knowledge, the unfavorable influence to health must have been owing to the escape, from the earth, of the gases of putrefaction.

10. DR. CHARLES A. CAMERON, *Professor of Hygiene, and Analyst to the City of Dublin.*—1. I have known one or two cases where illness was undoubtedly produced by the unwholesome emanations from a graveyard. This cemetery (the Abbey graveyard) is situated in the central part of the town of Dundalk, Ireland, and is surrounded by houses; the odor from it is most offensive, and the coffins in some parts are within eighteen inches of the surface. I have no doubt this place is the source of no inconsiderable amount of disease; in one case, I have known it to produce serious disease; but it is, of course, very difficult to be able positively to connect a case of illness with the bad condition of a cemetery situated near the patient. When we find a badly-kept cemetery, all we can assert is, that on general principles it must be more or less inimical to health and life.

2. On three occasions, I found well-water injuriously affected by the drainage from graveyards; in one of those instances, the well was within two feet of the graveyard.

The composition of one of those tainted waters was as follows:—

100,000 parts contained:—

Solid matters,		76.560 parts.
Aluminoid nitrogen,		0.085 "
Ammonia,		0.076 "
Including Nitrous acid,		1.265 "
Nitric acid,		3.700 "
Chlorine,		4.180 "

I am disposed to believe that the injuries arising from badly-kept graveyards are to be attributed to a far greater extent to the foul air than the

contaminated water. If the latter be very foul, it will, of course, produce diarrhoea, lowering of the vital powers, and other effects caused by water containing simple decomposing organic matter; but I am of opinion that the water tainted by graveyards does not cause typhoid fever or other zymotic disease. These maladies are each of them produced by the introduction of living poisons into the body, and these poisons are thrown out of the bodies of the sick. Sewage-contaminated water and air are the carriers of typhoid and cholera.

PHILIP H. HOLLAND, M. R. C. S., *Medical Inspector of Burials of England and Wales*.—If by the term cemeteries is meant what are popularly so called in England, namely, large urban or suburban burial-grounds, which may be fairly described as small parks or large gardens,—used also as places of sepulture,—in which regulations,* such as those enclosed, or others practically equivalent to them, are observed, I reply that I have never known of any instance of sickness which appeared to be induced or aggravated by any such cemetery, of ample size for its burials, well situated and well managed. If by cemeteries it is intended to include those burial-grounds, the use of which, in England, is now nearly superseded,—small, overcrowded, in close situations, and in which soil was disturbed before the putrid matter in it was decayed,—I reply that I have no doubt that much mischief was done by them; but that such mischief was more frequently in depressing health than in causing actual disease, and that other causes of ill-health so frequently, so almost constantly co-existed, that it is difficult to decide how much of it was due to one particular cause.

The evil has arisen both from poisoned water and poisoned air; the most numerous cases I just now remember were from foul water soaking from or bailed out of graves, rendering the air offensive, and, in some cases, poisonous, producing vomiting and purging. Such cases have now become very rare, because of the great improvement effected under the burial acts.

Water draining from cemeteries very rarely does any mischief, because it is very rarely allowed to mix with that used for drinking, except, indeed, after it has first passed through such a thickness of soil as must insure the complete oxidation of any organic matter it may contain. The mere idea of drinking graveyard-soakage is so disgusting, that it is almost always carefully avoided, even when no actual danger from it need be feared; and it is very probable that greater care has been taken to avoid this danger than has been necessary; for such soakage, which has passed through only a moderate quantity of soil, is often found more free from putrescible matter than water which appears to be quite wholesome, and is certainly perfectly inoffensive. It is nevertheless prudent and right to require that the water directly draining from a cemetery shall not mingle with that used for drinking; though, in several of the few cases in which injury from it has been suspected, I have found that the pollution certainly proceeded chiefly from sewers or cesspools, while it was very doubtful whether any of it was derived from a graveyard. The commissioners for inquiring into the pollution of rivers inform me, in reply to my inquiry, that "the samples of water from a densely-crowded, and, in consequence, recently-closed, cemetery, which have been analyzed in the laboratory of this commission, show that whilst such drainage-water is utterly unfit for human consumption, it is but very moderately polluted by organic matter. It can be safely admitted into any river or stream, not used for domestic purposes, without the slightest un-

* See pp. 277 and 278.

pleasant consequence. It is very similar to land-drainage from heavily-manured fields."

Dr. Letheby and Dr. Tidy have both examined, at different times, the water in the drain from the large cemetery for the city of London (Ilford), which was, on both occasions, found to be perfectly inoffensive, and proved to be more free from putrescible matter than the little river into which it flowed, which received the washings from cultivated fields and meadows. Dr. Letheby found abundance of nitrates, but very little ammonia or decomposing organic matter. The specimen Dr. Tidy examined contained, per gallon,—

Ammonia—actual or saline,	0.01
Nitrates,	3.24

The soil is drift-sand and gravel.

It would, however, be a dangerous error to conclude, that because a well or stream near a source of contamination is free from it when examined, it is therefore a fit supply for drinking. The most striking case I ever met with of poisoning by polluted water was by that of a well which is generally pure, but which on one occasion received the overflow of a neighboring cesspool allowed to become overfull. The effect was, that out of twenty-six persons who had their water-supply from the well, sixteen had cholera or diarrhoea within a few days, of whom nine died,—no fresh cases occurring after the cause was discovered and avoided. Cholera, though epidemic in England at the time, was not so in the village, in which there was only one other fatal case. There was no evidence or probability of contagion having been the cause.

We must confess to being greatly surprised at the small amount of evidence we have been able to gather of any positive injury known to result from burial-grounds. Of the five cases in this State, the first occurred "some years ago," and the fourth "years ago," and no particulars are given of either case. In the second case (Groveland), there is scarcely enough to hang a suspicion upon, especially as further investigation has shown the well to be 300 feet from the nearest grave, while the privy and barnyard are but 30 and 80 feet away, respectively. In the fifth case (North Prescott), the water has been found to be bad; but, since the nearest grave is 500 feet away, while there is a drain within less than 50 feet, and a privy and barnyard but little further removed, the contamination cannot fairly be attributed to the cemetery. Thus the third case (Lenox) is left as the only one in which there is a reasonable presumption that the cemetery may have caused injury to health. As the physician reporting the case has removed from the State, we have been unable to more thoroughly investigate it.

Of the cases not in this State, in Dr. Baker's, the influence of the graves was merely possible. Dr. Kennet, of London, refers to a crowded churchyard in that city, closed twenty-four years ago, at the time of the English burial reform; Dr. Cameron, of Dublin, reports one or two cases in Ireland, where the deleterious influence of graveyards was well established, and Mr. Holland, of London, than whom no person living can speak more authoritatively, says that he has never known any injury to result from any modern, well-managed cemetery, although he has from the old over-crowded burial-grounds, now nearly superseded. The two last-named authorities, although furnishing this evidence, are firm believers in the absolute harmlessness of burial, if properly performed.

Of the negative answers, the majority are monosyllabic. Of those which are more extended, a considerable number state that the cemeteries in their vicinity are at a distance from any dwellings. The following negative replies are selected as possessing some special interest:—

Bedford, Mass.—Believing profoundly in the expediency of abolishing the present repulsive method of disposing of the dead, and knowing from personal experience that a well twenty-two feet away from a privy, in a tolerably compact, gravelly soil, may be sensibly contaminated by percolation, I should be glad to bring some positive proof to fortify my strong conviction, but find myself quite unable to do so.

Cambridge, Mass.—I do not remember an instance in which I have had reason to believe that sickness was caused or aggravated by the proximity of dwellings to cemeteries. On the other hand, it may not perhaps be amiss to state, that I have known dwellings near to large cemeteries, in which persons have lived, children been born and reared, without evidence of injurious influences. Mt. Auburn cemetery, the Catholic cemetery, and the Cambridge city cemetery are quite near each other; the first two adjoining, and the other separated from these by a public road only. In Mt. Auburn alone, more than 19,000 interments have been made; in the other cemeteries, also, the numbers are large; but it is not known that new diseases have appeared in their vicinity, or that known diseases have been modified, or that they have injured the health of the neighborhood, or of the laborers constantly employed in them during the summer. Dwellings are within one hundred feet of the Catholic cemetery. The other Catholic cemetery at North Cambridge is crowded; in some instances several bodies in one grave. The cemetery is closely surrounded by houses fully inhabited, one house in the cemetery, but no injurious effects are known to me. There are several wells in Mt. Auburn. From that near the gate, many hundreds of visitors drink annually without known injury. There are interments within forty feet of another well, a favorite well with the workmen, and much used. A third well has a dis-

agreeable taste, and is used only for watering the grounds. The water has never, to my knowledge, been analyzed; it can easily be obtained. The drainage of the Catholic cemetery, above mentioned, at North Cambridge, was for many years into Fresh Pond meadow, and after the outlet of that meadow into Mystic River was cut off, the drainage of the meadow was into Fresh Pond itself. The water-supply for Cambridge is from this pond. No injurious effects from decaying matter have been proved, although much feared upon generally received sanitary views. Water in ponds from which water supplies are usually taken contains much living matter, fishes, reptiles, polyps, infusoria; indeed, if water from ponds contained no living animals it would be looked upon with suspicion, as probably injurious to animal life. But, if it contain living animals, it must also contain more or less dead animal matter, which in one instance was believed to have been in sufficient quantity to make Cochituate water oily and disagreeable to the taste.

Everett, Mass.—Have had many patients near Woodlawn cemetery. No typhoid, no dysentery, no more cholera infantum than elsewhere.

Lowell, Mass.—After careful inquiry here among the oldest residents and physicians, undertakers, employes in cemeteries and persons residing near the latter, and after some observations made in other places, from time to time, in the course of my life, I have failed to learn of any cases of sickness traceable to burying-grounds for their cause.

Malden, Mass.—I have practised medicine here for twenty-five years. Within the limits of the town, there are four or five burial-places. One of these is surrounded by dwelling-houses; several have a few residences in immediate proximity. I know of no evidence which goes to show that in these dwelling-houses sickness has been induced or aggravated in the manner referred to.

Middleton.—From a residence here of nearly forty years, and careful inquiry of those best informed on this subject, I am satisfied that the burial of the dead in this town has no unfavorable influence on the health of the living.

Orleans, Mass.—In this section of country, no cases of sickness of any kind have, to my knowledge, resulted from or been aggravated by the proximity of dwellings to cemeteries.

South Dennis.—Our parsonage is so situated that it takes all the drainage or washings of the cemetery, and for twenty-two years there has been very little sickness, and no one case that could be in any wise attributed to any poisonous influence arising from the cemetery. One case of typhoid fever and one of phthisis, both came to the parsonage after the disease had appeared and became established.

West Springfield.—I cannot find out that those living in the vicinity of the cemeteries have had any disease at all traceable to their situation.

Winthrop, Mass.—Although I have watched, with a good deal of interest, families residing near cemeteries, I have failed, thus far, to discover that it had any effect whatever upon the health of such families.

Dr. LIONEL S. BEALE, F. R. S., *London*.—I have not observed any cases, neither have I heard of any.

Dr. JAS. S. BAILEY, *Albany, N. Y.*—During an experience of more than twenty years in the practise of medicine, I cannot recall a single case of sickness attributable to such a cause, directly or indirectly.

The Albany Rural Cemetery contains 230 acres of land, and within the grounds there are already 20,000 human bodies laid.

Dr. J. S. BILLINGS, *Assistant-Surgeon, U. S. A., Washington, D. C.*—I know of no ill-effects from the very large military cemeteries around this city.

Dr. ROBERT REYBURN, *Washington, D. C.*—I lived for a number of years in Philadelphia within a block of a cemetery which was in constant use as a place of interment, and never remember to have seen a case of disease that could be fairly traced to that cause, though I practised extensively in the immediate vicinity. I can readily understand, however, that a cemetery densely filled in a crowded city may become a dangerous neighbor; but if it is thoroughly drained, and if the bodies are not buried within six feet of the surface of the ground, I do not believe there is any danger of its affecting the health of the neighborhood.

Dr. CHARLES M. ELLIS, *Member of State Board of Health, Elkton, Md.*—I have not observed any sickness to have been induced by the proximity of graveyards.

Dr. S. L. JEPSON, *Health Officer, Wheeling, W. Va.*—The following answers are given after consultation with six of our oldest and most respectable physicians, and may be accepted as our united opinions:—

1. No. 2. No.

Dr. MANNING SIMONS, *Charleston, S. C.*—For two years I was physician to a dispensary, which included two of the largest wards in the oldest part of the city of Charleston, and contained within its limits four cemeteries; but during that time I saw no cases of disease the origin of which I could trace to proximity to these localities.

Dr. W. DUNCAN, *Savannah, Ga.*—In order that you might have the views of our entire profession, I submitted your letter to our local society and requested that the subject should receive special consideration. In accordance with that request, the subject was thoroughly discussed and voted upon with the following result:—

First question: No—unanimous.

Second question: No—unanimous.

We will now pass to the consideration of the third question, which is intimately connected with the two which have preceded it.

QUESTION III.—*Water, believed to be contaminated with cemetery-washings, is desired for analysis. Could you, if requested, send a gallon of such water, with a full account of its source and the illness it has been supposed to produce?*

In response to this question, the evidences of water-contamination were so extremely small that the examination was not confined to these, but was extended to such waters as could be obtained from wells contiguous to graves, whether believed impure or not. The specimens (fifteen in number) were sent to the Massachusetts Institute of Technology, where the analysis was made by Prof. W. R. Nichols and Miss Ellen H. Swallow.

The samples examined are as follows :—

1 and 2. "From a well and brook respectively in Lindenwood cemetery, Stoneham. The former is constantly used for drinking purposes by visitors to the cemetery, and is generally considered pure. The brook is contaminated also by refuse from tanneries."

3. From a well in a cemetery at Lowell: "The water is used mostly for watering purposes, not commonly for drinking; not suspected of being impure or of causing any sickness. It tastes well and is almost clear."

4. From a well at Groveland, five hundred feet from a cemetery, and fifty from a privy, etc.

5. Well-water from a town in Hampden County: "Distance from the nearest grave two hundred feet. The water has been in constant use for twenty-nine years, and has not been suspected of causing disease, but is twenty-five feet from a privy, sink-spout and stable."

6. From a well in Hudson, Mass.: "At the extreme eastern end of a cemetery which slopes from west to east, with a number of graves of all ages in the immediate vicinity."

The water has been used for drinking purposes, but not for four years; has generally been considered pure. No other source of contamination in the vicinity."

7 and 8. From two wells closely adjoining a cemetery in Fitchburg. Neither has ever been considered impure or suspected of causing sickness; but this section of the city "has appeared more unhealthy than other parts, and within two or three years has seemed the centre of two epidemics of scarlet fever." "The cemetery is extremely unfavorably located. It is built on an elevated sandy knoll, bordered on two sides by streets, and quite a large population occupy these streets, and others close by, on land much lower down. There are also several reservoirs for the supply of water for domestic use almost under the hill, covered by the monuments of the dead."

"The first bottle was filled from a well under the very lowest corner of the cemetery; but the nearest recent interment I should judge to be a little more than one hundred feet. The other bottle was filled from a well in close proximity to the cemetery, but I believe there have been no recent interments within about two hundred feet; but the hill forming the burial-place of most of the dead rises quite abruptly to a considerable elevation. I am not aware that any cases of severe sickness have occurred in the families using the water of these wells."

9 and 10. From a spring and well in a cemetery in Canton: "The spring from which jar No. 1 was filled has a capacity of about ten gallons per minute, and is used for drinking purposes by visitors, laborers and a neighboring school of about eighty children. The soil in this vicinity is a coarse gravel. This being the newest part of the grounds, only about fifty graves have been made within a radius of one hundred and fifty feet. Jar No. 2 was filled from the well, which is, say four feet deep and two in diameter. Water from this well is delivered to about twelve families. Soil, coarse gravel. Nearest graves, one hundred feet distant and about ninety feet higher. There never has been any unusual sickness among those using the water from

either the spring or well ; but, on the contrary, the people are very healthy."

11, 12, 13 and 14. From four wells situated near a cemetery at North Hadley. "The cemetery is located upon a narrow ridge, trending to the south, these wells being in that direction, and on the same general level, from 360 to 720 feet from the cemetery, and have privies and house-drains within 50 feet of them."

15. From a well in Middlesex County, thirty rods from the nearest grave, while barn-yard, privy and sink-drain are very near. .

The following table shows at a glance the main facts in regard to location, etc., of these wells :—

TABLE II.—*Descriptive of Wells, etc.*

Number	LOCATION.	Depth, feet.	Age, years.	Soil.	Distance from nearest grave, in feet.	Distance from newest grave, in feet.	Whether used for drinking.	Whether suspected of causing sickness.	Other sources of contamination.	Remarks.
1	Stoneham, Well, .	10	10	Gravelly, .	60 ¹	60	Yes,	No,	None.	Water 2 ft. deep.
2	Stoneham, Brook,	—	—	—	—	—	—	—	Factories, tannery, etc.	—
3	Lowell, .	11½	15	Sandy, .	50	50 ²	—	No,	None.	—
4	Groveland, .	12	100	Sandy, .	300 ²	—	Yes,	Yes,	Barn-yard 80 ft. higher, privy 30 ft. lower, well close to house.	Water 3 ft. deep.
5	Hampden Co., .	17	29	Coarse sand, .	200	—	Yes,	No,	Privy, sink-spout and stable 25 ft. distant.	Water 15 in. deep; boiled impure.
6	Hudson, .	15	15	Gravel, .	10	35 ²	—	No,	None.	Water 5 in. deep.
7	Fitchburg, .	—	—	—	—	100	Yes,	No,	Not stated.	—
8	Fitchburg, .	—	—	—	—	200	Yes,	No,	Not stated.	Graves much higher than well.
9	Canton, Spring, .	—	—	Coarse gravel, .	75	75 ²	Yes,	No,	None.	—
10	Canton, Well, .	4	—	Coarse gravel, .	100	—	Yes,	No,	None.	—
11	North Hadley, .	20	30 to 40	Sandy, .	360	—	Yes,	No,	Privies and drains within 50 ft.	Offensive to taste and smell.
12	North Hadley, .	20	30 to 40	Sandy, .	510	—	Yes,	No,		—
13	North Hadley, .	20	30 to 40	Sandy, .	720	—	Yes,	No,		—
14	North Hadley, .	20	30 to 40	Sandy, .	660	—	Yes,	No,	Drain less and barn-yard and privy more than 60 ft. distant.	Offensive odor.
15	Middlesex Co., .	15	100	Hardpan, .	495	545 ²	Yes,	No,		—

¹ Less than 60.² About.³ No interment for 1 year.⁴ No interment for 3 years.⁵ No interment for 1 month.⁶ No interment for 25 years.⁷ Not commonly.⁸ No interment for 6½ months.⁹ Not for 4 years.

The following tables show the results of the analyses of Prof. Nichols and Miss Swallow. In the first, the results are expressed in parts per 100,000, and in the second, in grains per United States gallon. It will be observed that the column headed "reduced silver" in Fleck's table is omitted in these. This refers to a new method, proposed by Fleck, of determining organic impurities by the amount of silver which they will reduce. This method was applied in the analysis of all of these samples of water, but the results, considered by Prof. Nichols of such questionable value, they have been omitted.

TABLE III.—*Examination of Water in the Vicinity of Graves in Massachusetts.*
[Results expressed in Parts per 100,000.]

Number.	Date.	LOCALITY.	Ammonia.	"Albuminoid Ammonia."	SOLID RESIDUE OF UNFILTERED WATER.			SOLID RESIDUE OF FILTERED WATER.			Chlorine.	Nitrogen as Nitrates and Nitrates.	Phosphates.
					Inorganic.	Organic and Volatile.	Total.	Inorganic.	Organic and Volatile.	Total.			
1	1874. Sept. 8,	Well in Lindenwood cemetery, Stoneham,	.0040	.0110	2.92	.04	2.96	-	-	-	.84	Trace.	Trace.
2	8,	Brook running through Lin- denwood cemetery,	.0044	.0074	23.36	4.72	28.08	-	-	-	9.60	Trace.	Trace.
3	8,	Well in Lowell,	.0051	.0047	3.84	1.36	5.20	-	-	-	.32	-	-
4	14,	Groveland,	.0005	.0073	9.36	.64	10.00	-	-	-	.40	-	-
5	19,	Hampden Co.,	.0064	.0113	28.40	4.60	33.00	-	-	-	5.60	Trace.	Trace.
6	24,	Hudson,	.9500	.1500*	7.32	7.60	14.92	5.00	4.28	9.28	.70	Trace.	Trace.
7	25,	Fitchburg, Mr. Damon's well,	.0031	.0027	4.48	1.52	6.00	-	-	-	.28	†	†
8	25,	Mr. Danby's well,	.0020	.0023	4.20	1.00	5.20	-	-	-	.24	†	†
9	29,	Canton, No. 1,	.0027	.0040	4.12	.40	4.52	-	-	-	.44	†	†
10	29,	No. 2,	.0020	.0027	4.72	.48	5.20	-	-	-	.40	-	-
11	Oct. 1,	No. Hadley, No. 1, F. Smith,	.6840	.0620	122.40	16.20	138.60	-	-	-	13.20	Trace.	Trace.
12	1,	No. 2, E. Smith,	.2660	.0380	24.80	7.40	32.20	-	-	-	3.20	†	†
13	1,	No. 3, H. Smith,	4.9220	.0440	64.28	8.80	73.08	-	-	-	8.80	†	†
14	1,	No. 4, A. Belden,	.3380	.0180	38.82	10.80	49.12	-	-	-	7.60	Trace.	Trace.
15	12,	Middlesex Co.,	.0200	.0156	5.92	1.00	6.92	-	-	-	.40	Trace.	Trace.

* The filtered water gave .0456 "albuminoid ammonia."

† Considerable.

‡ Very small amount.

§ Large amount.

NOTE.—The qualitative tests for nitrates and phosphates were applied to the *unconcentrated* water.

TABLE III. a. *Examination of Water in the Vicinity of Graves in Massachusetts.*

[Results expressed in Grains per U. S. Gallon.]

Number.	Date.	LOCALITY.	Ammonia.	"Albuminoid Nitrogen."	SOLID RESIDUE OF UNFILTERED WATER.			SOLID RESIDUE OF FILTERED WATER.			Chlorine.	Nitrates and Nitrites.	Phosphates.
					Inorganic.	Organic and Volatile.	Total.	Inorganic.	Organic and Volatile.	Total.			
1	1874.												
2	Sept. 8,	Well in Lindenwood cemetery, Stoneham, Mass., . . .	.0024	.0064	1.70	.02	1.72	-	-	-	.49	Trace.	Trace.
3	8,	Brook running through Lindenwood cemetery, . . .	.0026	.0043	13.62	2.75	16.37	-	-	-	5.60	Trace.	Trace.
4	8,	Well in Lowell, . . .	.0030	.0027	2.24	.79	3.03	-	-	-	.19	-	-
5	14,	Groveland, . . .	.0003	.0043	5.46	.37	.583	-	-	-	.23	-	-
6	19,	Hampden Co., . . .	.0037	.0066	16.58	2.68	19.26	-	-	-	3.27	Trace.	Trace.
7	24,	Hudson, * . . .	.5545	.0875	4.27	4.47	8.71	2.92	2.50	5.42	.41	Trace.	Trace.
8	25,	Fitchburg, Mr. Damon's well, . . .	.0018	.0016	2.61	.89	3.50	-	-	-	.16	Trace.	Trace.
9	25,	Mr. Danby's well, . . .	.0012	.0019	2.45	.58	3.03	-	-	-	.14	Trace.	Trace.
10	29,	Canton, No. 1, . . .	.0016	.0023	2.40	.23	2.63	-	-	-	.26	Trace.	Trace.
11	Oct. 1,	No. 2, . . .	.0012	.0016	2.76	.28	3.04	-	-	-	.23	Trace.	Trace.
12	1,	N. Hadley, No. 1, F. Smith, ¶ . . .	.3992	.0362	71.43	9.45	80.88	||	||	||	7.70	Trace.	Trace.
13	1,	No. 2, E. Smith, ¶ . . .	.1553	.0222	14.47	4.32	18.79	-	-	-	1.87	Faint traces.	Faint traces.
14	1,	No. 3, H. Smith, ¶ . . .	2.8720	.0257	37.52	5.14	42.66	-	-	-	5.14	Faint traces.	Faint traces.
15	1,	No. 4, A. Belden, ¶ . . .	.1973	.0105	22.37	6.30	28.67	-	-	-	4.44	Trace.	Trace.
15	12,	Middlesex Co., . . .	.0116	.0091	3.45	.58	4.03	-	-	-	.23	Trace.	Trace.

* Very turbid, one mass of animalcules under the microscope. Odor, when concentrated, very offensive.

† Lesser amount.

‡ The appearance of these waters was not such as to cause a suspicion of their very bad quality. Nos. 1 and 3 had a little suspended matter which the microscope showed to be in a state of decomposition, very few vegetable organisms growing.

† Considerable.

‡ Very bad odor; much organic material.

§ The appearance of these waters was not such as to cause a suspicion of their very bad quality. Nos. 1 and 3 had a little suspended matter which the microscope showed to be in a state of decomposition, very few vegetable organisms growing.

In order to afford a standard for comparison, the subjoined analysis of the Cochituate water at Boston, made July 4, 1873, is copied from Prof. Nichols' article on "The Present Condition of Certain Rivers of Massachusetts," in the Fifth Annual Report of the State Board of Health.

COMPONENT PARTS.	Parts per 100,000.	Grains per gallon.
Ammonia, . . . . .	.0083	.0019
"Albuminoid Ammonia," . . . . .	.0120	.0070
Inorganic,	2.8400	1.6600
Organic and Volatile,	2.8000	1.6300
Total dissolved matters,	5.6400	3.2900
Chlorine, . . . . .	.3400	.2000

We find, therefore, that the wells at Stoneham, Lowell and Groveland scarcely differ in purity from the Cochituate water; those at Fitchburg and Canton are more pure than this; that at Hudson and the one in Hampden County (No. 5) are impure; that in Middlesex County (No. 15) very slightly so; while the four wells at North Hadley are very impure. The brook at Stoneham, although containing but little ammonia and albuminoid ammonia, is very rich in chlorine. By referring to table No. II., it will be seen that all of the impure wells, with the single exception of that at Hudson, are at a great distance (200 to 720 feet) from the nearest grave, while they all, with the same exception, have privies, drains or barn-yards at distances of from 25 to 50 feet. The well at Hudson is 15 feet deep, in gravelly soil, only 10 feet from the nearest grave; the next nearest grave is 12 feet distant and six years old; the newest grave in the vicinity is 35 feet distant and five and a half months old (in September, 1874); the ground slopes towards the well, and there is no other possible source of contamination in the vicinity. The water has been considered pure, though not used for four years. Analysis shows it to be very rich in ammonia, albuminoid ammonia, inorganic and organic residue, but with very little chlorine. This well, therefore, is undoubtedly contaminated by the proximity of graves; but, contamination from this source cannot, with any show of reason, be affirmed of any of

the others. Three of the purest wells, viz., Nos. 1, 3 and 9, are nearer to graves than any other, except that last mentioned, the distances being respectively 60, 50 and 75 feet.

If any deduction may be drawn from so limited a number of analyses, it is this: that wells in or near cemeteries (unless *very* near to graves, as in No. 6) enjoy an especial immunity from contamination, inasmuch as their position renders them less likely than others to be tainted by privies, drains and cesspools.

Fleck's examinations of Dresden wells have brought him to a similar conclusion, as may be seen by referring to the passages from his report, already quoted.

The evidence that a great amount of disease, especially typhoid fever, is induced by drinking-water polluted by drains, privies and cesspools, is constantly accumulating. It can be found in all of the previous reports of this Board, and all sanitary literature abounds with it. The number of cases of sickness, and even of death, occurring annually in Massachusetts from this cause is certainly enormous; and yet, after a diligent inquiry, we have been unsuccessful in obtaining a single example of disease presumably induced by water contaminated by the proximity of burial-grounds.

From the report upon "Sewerage," etc., by the late Dr. Derby and Prof. Nichols, in the Fourth Annual Report of the State Board of Health, we extract this foot-note to page 101.

"The following table shows the amount of impurity recently found in certain wells in eastern Massachusetts, by Mr. S. P. Sharples, who published the results in the 'American Chemist,' for Nov. 1872. It by no means represents the general character of our wells, but shows how bad they may become by intercepting the drainage of barn-yards, privies and other sources of filth. In the case of the well at Webster, it is stated that the water was sweet and pleasant to the taste; but the family using it had typhoid fever, and this circumstance led to the examination. The numbers represent grains in one United States gallon:—

LOCALITY.	Inorganic matter.	Organic and Volatile.	Total weight of Residue.
Newton,	14.12	6.53	20.65
Waltham,	17.79	7.46	25.25
Waltham,	4.66	7.60	12.26
Hyde Park,	13.12	7.98	21.10
Andover,	8.14	8.46	16.60
Taunton,	9.91	8.74	18.65
North Cambridge,	16.42	8.75	25.17
Woburn,	62.71	10.78	73.49
Newton,	19.25	13.41	32.66
Andover,	40.59	16.03	56.62
Webster,	15.81	29.00	44.81
Chelmsford,	47.25	29.16	76.41
Andover,	3.79	33.54	37.33

In these wells, the organic and volatile ingredients are in larger proportions than in any of those we have just been investigating, excepting the well at Hudson, and the four at North Hadley; while the very worst upon our list is surpassed in impurity by the last three upon Mr. Sharples' list.

In summing up this investigation, we cannot avoid the conclusion that, as far as it goes, it shows that any injurious influence exerted upon the public health by burial-grounds, as at present managed in this State, as well as throughout the United States, is almost unknown; and that this, compared with the ordinary causes of disease, which exist about every dwelling, is utterly insignificant. In other words, a living man in sound health is far more to be dreaded as a disease-producing agent, than is a dead man buried with ordinary care.

IV. MEDICAL OPINION OF BURIAL AND CREMATION.

The last two questions in our circular had for their object the obtaining of a somewhat general expression of opinion from the medical profession, concerning the adequacy of the present method of disposing of the dead, and of the need which may exist for the adoption of any other method. The questions are these:—

QUESTION IV.—*Do you consider interment the best method, in a sanitary point of view, of disposing of the dead?*

The answers may be classified as follows :

	Massachusetts.	Elsewhere.
Yes,	53	17
Yes, with precautions,	12	6
Yes, in the country,	21	—
No,	36	8
No opinion,	11	7
	<hr/> 133	<hr/> 38

QUESTION V.—*If not, please state your views concerning Cremation, or any other method which you may think superior.*

This somewhat indefinite request has received no less indefinite replies, and it is therefore not without considerable difficulty that they have been grouped, as in the following tabular statement :

	Massachusetts.	Elsewhere.
Approve,	36	11
Approve in cities,	13	1
Disapprove,	11	10
Prefer embalming,	3	—
Prefer chemical disintegration,	4	—
Prefer encasing in Portland cement,	1	—
No opinion,	65	16
	<hr/> 133	<hr/> 38

Although free from any personal bias in this inquiry, we cannot withhold the observation that the value of the opinions against interment, and of those in favor of cremation, is impaired by the fact that they are based on theoretical grounds, rather than personal knowledge. Thus we find that, of the forty-four who are dissatisfied with interment, only two have observed instances of sickness resulting from that method; the instances being years ago, in both cases.

Of the remaining nine who report having observed such cases of injury, seven express themselves in favor of adhering to the present custom, one thinks interment the best method, providing lime be strewn on the coffins, and one prefers burial for the country and embalming for the city. The disapproval of interment, therefore, grows out of a general impression that it is frequently harmful; and this impression doubtless results, in great part, from former reading of the reports upon the condition of the English churchyards, thirty years ago,—a state of things which no longer exists. The opinion in favor of cremation, expressed by sixty-one correspondents, is evidently based upon this general disapproval of interment, added to a scientific and æsthetic interest in the subject, induced largely by the recent agitation in its favor.

But we do not wish to disparage the opinions expressed by so large a number of professional gentlemen of the highest standing. The fact remains, that whether from hygienic or other reasons, more than a third of our correspondents have given their testimony in favor of the adoption of cremation as a substitute for burial. Some of these expressions of opinion will be presented.

DAVIS.—I do not consider interment, *as it is frequently practised in this country*, the best method, in a sanitary point of view, of disposing of the dead. Yet I think that, under proper regulations, it can be made perfectly safe. If graves are made deep, in a dry, porous soil, I think it probable that all noxious gases will be absorbed or chemically changed as fast as they are produced. In the hilly parts of the country, there are many cemeteries on steep hillsides, adjacent to and overlooking towns or villages, and many others in low and damp ground. In hillsides, underground springs are common, and the water from these, as well as from copious rains, must sometimes pass through graves in sufficient quantities to carry off gases in too great abundance to be immediately absorbed by the surrounding earth. I believe instances are not unknown of the complete excavation of graves by heavy rains. In low situations, during some seasons of the year, the ground is liable to be saturated with water already so impregnated with gases as to be incapable of receiving any more. Here, when a grave is dug, the water runs into it so fast that it is impossible to make it very deep, and in cemeteries so located it is not uncommon to bury the dead in graves already filled to a depth of several inches with mud and water. In such conditions, the gaseous products of the decomposition of the bodies, and the wood of the coffins and boxes, are given off rapidly, and not being readily absorbed by the moist earth, are largely exhaled therefrom. To such an extent did this occur in one part of the cemetery of Bloomfield, N. J., that the odor in the neighborhood was very unpleasant, and about a year ago it was found necessary to remove all the bodies from that part of

the inclosure. Cremation would have one sanitary advantage over interment, in avoiding the sickness which sometimes follows the customary exposure of those who attend burials in inclement weather.

FISKE (SAMUEL A.).—In a country as sparsely settled as the United States, and with large towns and cities supplied with water from streams or reservoirs of large size, and with the custom of burying the dead in cemeteries remote from dwellings,—which is becoming almost universal,—I think there is no danger to be apprehended from the burial of the dead.

GOODENOUGH.—I have not observed any instances in which diseases have been induced or aggravated by proximity of dwellings to cemeteries as yet. But there is a private cemetery laid out and occupied in part so near my own dwelling that I *have* feared and *do* fear that, if the lots are all taken up and filled, it might prove very unhealthy to the occupants at some future time. I have, therefore, purchased several lots nearest my dwelling, where some had been interred, and have part, and am about having the remainder, removed to more distant lots in this and other cemeteries at my own expense.

HITCHCOCK.—In answer to questions three and four, it would seem that, strictly speaking, any method was "*best*" which removed the possibility of injury to the living. Interment does, in my opinion, answer this requirement in most of the towns of the State, and may easily be made to do so in all. Cremation, or some other method, may be proved to be as good in a sanitary point of view as the known influence of the disinfecting power of humus or soil in general; but, until this is proved, the method by interment should be preferred when it is possible.

HOLMES (A. R.).—I consider interment the best method, when practised as I have seen it in South America. There the coffin is opened before burial and a quantity of quicklime thrown over the body. As a result, the soft parts are at once destroyed, all odor prevented, and at the end of a given time the bones are disposed of according to the wishes or ability of friends.

HOSMER.—It seems to me that the bodies of those who die of small-pox, certain forms of scarlet fever, erysipelas, puerperal disease, and diphtheria, should have the benefits of the disinfecting properties of heat, and be burned at once. The cremation-furnace would then become an appendage of the small-pox hospital.

NICKERSON.—I think that, although there is no urgent demand at present, on sanitary grounds, for the general employment of any new method of disposing of dead human bodies, the time will come, as it may have come in some cases already, when in crowded localities, some new plan of burial must be adopted.

PARKER.—For more than twenty years I have believed that the true way of disposing of the human dead is by rapid burning,—I say rapid, for chemistry teaches us that decomposition of the body, when interred, is but a *slow* process of combustion.

ROCKWELL.—Cremation, I have no doubt, in a sanitary point of view, is a better method than interment, of disposing of the dead, especially in a densely populated section of the country, or where bodies cannot be removed

from the neighborhood of dwellings; but in country places I believe interment to be perfectly safe.

SNOW.—Our cemeteries are situated on the southern and western borders of the city, so that the prevailing winds, south and west, must blow over them before we receive them, and yet we have one of the most healthy cities in the Commonwealth; have less typhoid and scarlet fever than any city of its size in the State.

SULLIVAN.—Theoretically, cremation seems to me to be a better method, in a sanitary point of view, of disposing of the dead than interment, especially when it (cremation) is performed according to the Roman method.

WEBSTER.—I consider cremation as a rational and suitable method of disposing of the dead, only objectionable at *present*, in consequence of educational prejudices.

WYMAN (M.).—In the present state of the arts, and by methods already in use, dead bodies can undoubtedly be destroyed by fire without offence or injury to health; the same object can be obtained by extra-mural interments. Sentiment will probably favor the latter.

Prof. HENRY M. ACLAND, *Oxford, Eng.*—My impression, shall I say my prejudice, personally, is, that inhumation is, in ordinary populations, the best scientifically, and the most congenial to humane feelings. I have, however, long felt that in dense populations some other mode of sepulture may become absolutely necessary. Scientific burning may be, no doubt, effectual; possibly, too, not inharmonious to society when once accustomed to it. Still, on a large scale (as two hundred a day, in London), it will not be devoid of some annoyance.

Dr. LIONEL S. BEALE, *London, Eng.*—Upon the whole, I consider interment the only method really available. I have been surprised that cremation should have been seriously recommended for disposing of the dead of large and populous cities. Some of the arguments put forward in its favor, and especially those from the economical point of view, appear to me ridiculous and unworthy of serious consideration.

P. H. HOLLAND, M. R. C. S., *London.*—I am quite convinced, as the result of my nearly twenty-one years' extensive observation, that interment in cemeteries of proper size, properly situated and properly managed, is perfectly safe; nay, if proper management could be always secured, would be safe, even in the close neighborhood of houses. But it is prudent and wise to leave them in open situations, both because land wanted for building on is very expensive, and therefore cemeteries close to houses would probably be too small to be safe; and, secondly, because as everything human is liable to mismanagement, therefore graves should be where, if accidental mismanagement should occur, serious mischief need not be feared. Another reason is, that bodies are sometimes brought for burial in an offensive or dangerous condition, from which injury might be caused if dwellings were very close; but, when there is nothing to obstruct the free passage of air, there is little practical risk to any one, and none at all to those at some moderate distance.

I do not see any practical advantage in the substitution of cremation for interment. Each is perfectly safe if perfectly conducted, but interment needs less elaborate care to render it safe; and any danger to be feared from bodies before burial would be just as great before burning, nay greater, if, as has been suggested, the place of burning be not as distant from inhabitants as the place of burial. I do not doubt that cremation might be, or that it *generally* would be, conducted with safety, but burial is almost invariably so conducted, and there seems to be nothing to gain by substituting the quick combustion by fire for the slow combustion of crematoria, or decay, for no other apparent object than avoiding the employment for burial of a very moderate amount of land. So far from regretting that certain pieces of land are left near all our towns to be used first as places of sepulture, and afterwards as open spaces ornamented with trees and flowers, it is to be most earnestly desired that the quantity of land to be left only indirectly productive is not far greater. I deny entirely that the land for open spaces near towns is wasted; it is, on the contrary, put to a most valuable use. Such spaces both prolong our lives and make our lives better worth prolonging, as bad health embitters as well as shortens existence.

Dr. JAS. H. KENNET, *London, Eng.*—In my opinion, the only objection to cremation is the feelings of survivors, and that is one that might be overcome by reason.

Dr. HENRY LETHEBY, *Medical Officer of Health, and Food Analyst, London, Eng.*—As regards cremation, I see but one objection to it, and that is, the possibility, without great vigilance, of the defeat of justice in the case of secret murder; for if, by any means, the murderer could get the body of his victim destroyed by fire, there would be no after-evidence of poison, or what not.

If, therefore, cremation were the appointed means of disposing of the dead, it would be necessary that some properly qualified officers, and best, the medical officer of health, should inquire into the particulars of every sudden or mysterious death, and should communicate with the coroner or sheriff-substitute whenever he thinks a further investigation is necessary.

With this precaution, which would be essential to public safety, cremation would be the best means for the disposal of the dead.

Prof. CHAS. A. CAMERON, *Dublin, Ireland.*—I am of opinion that the earth is the proper receptacle for dead bodies, and dead organic matter generally, and, if the simplest and most obvious precautions are taken, the interment of dead bodies in cemeteries cannot give rise to any nuisance. Where bodies undergo decomposition in the open air, there are evolved from them carbonic anhydride, watery vapor, carburetted hydrogen, sulphuretted hydrogen, phosphuretted hydrogen, ammonia and solid particles of putrescent matter.

Beneath the clay, and especially in the presence of lime, the nitrogenous portion of the body, instead of flying off under the form of ammonia, becomes oxidized into the innocuous nitric acid; and all the above-named substances are oxidized in the pores of the soil. The emanations from bodies in badly-kept graveyards certainly possess a very offensive odor, but where there is no overcrowding, the air is perfectly sweet. There are three large suburban cemeteries in Dublin, the air and drainage-water of which I have found perfectly free from objectionable matters.

A few data may be here used to show how easy it is to prevent cemeteries from being nuisances injurious to health.

In a cemetery, the interments should not (as a matter of fact they do not, except in rare cases) exceed one hundred per acre per annum. Let us assume that the graves vary from three to eight feet in depth, and that the soil, or absorbent material, is only eight feet deep. About one-half of the human beings who enter this world, die before they attain the age of five years; as, therefore, the majority of the dead are children, and as the adults who die, are, as a rule, emaciated by disease, we may assume that the mean weight of a dead body is fifty pounds. One acre of soil, eight feet deep, weighs 2,650,000 pounds; therefore, the addition of one hundred bodies, weighing altogether 5,000 pounds, to the soil, would increase its weight to the extent of .1825 per cent. It must, however, be borne in mind that at least 80 per cent. of the weight of dead bodies consists of water and earthy matters; therefore, the 2,650,000 pounds of soil actually receives only 1,000 pounds of dry organic matter yearly, and that it is only this portion of the bodies from which gases and vapors injurious to health are evolved. Small as the quantity of organic matter above mentioned is, if it were allowed to accumulate, it would, in the course of years, assume dangerous proportions; but, if herbage be grown on the cemetery, organic matter cannot accumulate on the soil. The quantity of grass which might be obtained from an acre of a cemetery soil, I may put down at twelve tons yearly, but let us assume it to be only three tons. Grasses contain from 20 to 35 per cent. of dry organic matter. If we suppose herbage in the cemetery to contain only 25 per cent. of dry organic matter, then it follows that whilst 1,000 pounds of animal (dry) matter would be annually added to the soil, there would be removed from the latter, 1,680 pounds of dry vegetable matter. Four feet of soil above and three feet below a dead body would, in my opinion, act as perfect absorbents for the gases and vapors evolved during decomposition. Where a bad odor is observed in a cemetery, it is because the bodies interred therein are placed in close contact and near the surface.

I may here remark, that a heavily-manured field receives at one application a much larger quantity of decomposing organic matter than is placed in the same area of a cemetery during the whole year. An ordinary application of stable-dung is 40 tons per acre, containing about 5,000 or 6,000 pounds, weight of (dry) organic matter. It would be useful if the bottom of every grave was composed of a layer of burnt lime a few inches deep; this stratum would intercept the oozings from the coffins, and convert the most dangerous portion of them, namely, the nitrogenous, into nitric acid, with consequent formation of harmless calcium nitrate.

With respect to cremation, it would be better to burn the dead than to inter them in badly-kept cemeteries; but for the reasons above stated, I think it would in no wise be injurious to the public health were we to continue to bury our dead under conditions which would insure the quiet commingling of the elements of their bodies with the soil,—conditions which, as I have already remarked, are simple, obvious and practicable. As a matter of mere sentiment, I believe that the immense majority of the Christian world would prefer to consign their deceased relatives to the earth, rather than commit them to the flames.

Dr. C. R. AGNEW, *New York*.—I believe that cemeteries may be so placed as to make the pollution of the air and water-supply of communities impossible. Railroads and other means of rapid and cheap transportation,

make intra-mural interment easy and safe. The position of cemeteries with regard to the water-supply is a question of sanitary engineering. Where one well is polluted by the drainage of a burial-ground, *ten thousand* are polluted by the sewage of privy-sinks, barnyards and kitchens.

Dr. GEORGE M. BEARD, *New York*.—The amount of sickness that is demonstrably caused by cemeteries must be comparatively trifling. There is now, and for years there will be, plenty of space for the burial of the dead without any probability of injury to the living. There ought to be full freedom in this matter; those who prefer to be burned ought surely to have the privilege.

Dr. AUSTIN FLINT, *New York*.—I can only say that cremation is, in my feeling, at variance with the respect due to the beloved and honored dead. How far this sentiment may be owing to the influence of time-honored usage, I will not undertake to say.

Dr. JOHN ORDRONAU, *Roslyn, New York*.—Believing matter to be indestructible, I see no *teleological* difference between ashes or mould. Physically, we all eventually become C. H. N. O., but in doing so, I do not admit that we have any right to decompose our living neighbors by poisoning them atmospherically.

Dr. HENRY HARTSHORN, *Philadelphia*.—If burial be deep, one body only in each grave, and the cemeteries in secluded places out of town, and well planted with trees, it must be free from unsanitary tendencies. These conditions are not hard to obtain, at present, in this country, and the facility of securing them, as compared with the difficulty of effecting complete destruction by cremation, seems to me an important reason in favor of continuing the practice of interment. When, however, population becomes very crowded (as in England) and land very costly, the difficulties of perfect methods of interment must greatly increase. Then, I believe, cremation will be a very great improvement.

Dr. EDWIN M. SNOW, *Providence, R. I.*—In a sanitary point of view alone, there can be no doubt that, as a rule, cremation or any other process by which the animal matter will be most speedily and effectually destroyed or decomposed, is better than interment. But the possible danger from interment is not necessarily connected with it, but more generally arises from neglect or abuse in its practice.

Prof. R. C. KEDZIE, *Lansing, Mich.*—To-day I gathered a specimen of well-water, near the Lansing city cemetery, and the brief examination I have already given it, shows the presence of large amounts of chlorides and nitrates, a sensible amount of nitrites, and very distinct traces of phosphates.

Dr. CHAS. M. ELLIS, *Member State Board of Health, Elkton, Md.*—I believe that, with a careful selection of localities, removed but not remote from centres of population, good drainage being secured, we have in our present system of interments the best means of disposing of our dead.

Dr. S. L. JEPSON, *Health Officer, Wheeling, W. Va.*—Cremation is certainly the best method of disposing of the dead, provided nothing but the *sanitary*

bearings be taken into consideration; and provided the *means* of burning are so perfected as to be free from sanitary defects.

Dr. MANNING SIMONS, *Charleston, S. C.*—If interments be made at a suitable distance from cities and towns, my impression is that, so far as the health of communities is concerned, it is a safe method.

Dr. W. DUNCAN, *Savannah, Ga.*—Whilst our Medical Society consider cremation the best method of disposing of the dead, in a sanitary point of view, they fail to find an urgent necessity for it in the less crowded and densely populated cities.

Dr. JEROME COCHRAN, *Mobile, Ala.*—From a sanitary point of view, while I consider interment a very good method of disposing of the dead, I cannot say that I consider it the best method.

Dr. S. S. HERRICK, *New Orleans, La.*—I consider cremation the best plan yet devised for large cities, where suitable and sufficient ground for interment must be sought at inconvenient distances. As regards communities less densely populated, I think the matter has not yet become mature enough for discussion.

CONCLUSION.

The examination which we have attempted of the relative advantages of cremation and burial, has, of necessity, been imperfectly performed. As regards cremation, the fact that it has not yet been practised, in a scientific manner, on this side of the Atlantic, has made us dependent upon the reports of European experimenters, of whom the number has, as yet, been small. As regards burial, although the investigation has been made as thoroughly as the limited time at our disposal would permit, completeness having been especially aimed at in reference to the system as at present practised in Massachusetts, yet the study cannot be regarded as furnishing positive results until it has been pursued for a much longer time, by a large number of investigators. This further investigation we earnestly hope will be generally undertaken. In the meantime, the present investigation has yielded certain results which appear to us sufficiently definite to be summed up in the following aphorisms:—

1. Pyre cremation, as performed by the ancients and by modern Asiatic nations, is an incomplete and disgusting process, certain to load the atmosphere with noxious fumes, and not certain to thoroughly consume the organic portions of the body.

2. Cremation, accomplished by means of the Siemens furnace, at an enormously high temperature, the fumes being subjected to a second combustion, is a complete, rapid and inexpensive process, in no way offensive to bystanders, nor liable to contaminate the general atmosphere. Sir Henry Thompson's first method, by means of a double reverberatory furnace, is apparently almost as satisfactory.

3. The three methods of recent Italian experimenters are all unsatisfactory. The temperature attained by Brunetti and Polli is not sufficiently high, while Gorini's method, although as yet but imperfectly tested, must obviously be both inconvenient and expensive.

4. Burial in contracted spaces of ground, in the midst of cities and villages, as practised by all Christian nations from very early times until a period comparatively recent, and not yet wholly discontinued, has been repeatedly proved injurious to the health of the community, in proportion as such spaces of ground are overcrowded with bodies. This malignant influence is most apparent during epidemics, when the mortality in the vicinity of these burial-grounds has been frequently observed to be excessive.

5. Extra-mural interment, with regulations for the prevention of crowding, as now adopted by all of the largest cities of Europe and America, and very generally in smaller places, prevents, by removing the dead from the vicinity of the living, any possible injury to the public health. This plan, also, by increasing the number of public parks, is a positive sanitary benefit.

6. Burial, as now practised in Massachusetts, is partly extra-mural and partly intra-mural. Regulations in regard to the depth of graves, their distance apart, and distance from dwellings and wells, are less stringent than in several European countries; but boards of health are empowered to prevent burial-grounds from becoming nuisances. Any injury to health, even where the grounds are located in the midst of populous towns and villages, is in this State an almost unheard of occurrence.

7. In other parts of the United States, the same state of things exists as in Massachusetts, with the same general immunity from injury. In England, extra-mural interment is more general than here, and the laws relating to burial are more strict, and, except perhaps in rare cases of infraction of the laws, the public health is not affected.

8. The occasional injury to health from the proximity of burial-grounds which occurs or is likely to occur in this country, may easily be prevented by the complete abolition of the intra-mural system.

9. *Cremation, therefore, is an innovation not demanded in this country, on sanitary grounds; if, however, perfectly accomplished, by the best method known, there is no reason why its adoption should not be optional with all persons.*

Whether cremation or interment be the means employed for the disposal of the dead, the process ought to be regulated by state governments or state boards of health. Should cremation be adopted to any extent whatever, a board of inspectors should be appointed, who shall see that no unsuitable apparatus is made use of, and that the operation is properly conducted. This board should consist of engineers and physicians. Since cremation requires more complicated apparatus and more operative skill than burial, it is more likely than the latter process to be imperfectly accomplished. The difficulty of consuming a human body is very great, and it is improbable that it would always be performed with that completeness which has been attained in a few initial cases, under the supervision of scientific men and persons interested in the success of the project. The imperfect combustion of the gaseous products would create a nuisance at least as great as any ill-managed burial-ground could become, and therefore constant vigilance on the part of the inspectors would be requisite.

The precautions to insure the detection of criminal poisoning would necessarily be very carefully taken. The appointment, as suggested by Sir Henry Thompson, of officers corresponding to the French "*Médecins Vérificateurs des*

Décès," who should minutely examine into the circumstances of every death, would go far toward accomplishing this end; but, as it is unlikely that any community can be brought to adopt that other suggestion of his "to preserve, in every case of death, the stomach and a portion of one of the viscera, say for fifteen or twenty years, or thereabouts," the detection of poisoning would doubtless be sometimes prevented, the furnace standing to the murderer in the relation of "accessory after the fact."

But, since cremation has not yet come into vogue among us, and since the likelihood that it ever will do so to any great extent, is at least doubtful, we are at present more directly concerned with the practice of burial and the measures by which this may be made innocuous.

The incorporation in the statute law of regulations fixing the depth of graves, the superficial area allotted to each, and forbidding the use of vaults, unless the coffin be separately entombed in an air-tight manner, would insure uniformity throughout the State, and be an improvement upon the present plan of leaving the whole matter to the hypothetical wisdom of local boards of health, composed in the majority of towns of the selectmen.

We would also suggest the adoption of a regulation that no new cemetery shall be located within the limits of any city or village; that no grave shall be dug within two hundred yards of any dwelling, or any well used for drinking purposes; and that the perpetuity of this separation be secured by requiring every cemetery to be surrounded with a belt of land at least two hundred yards in width not used for interments. The planting of this belt with trees would be an additional safeguard, by interposing a barrier to the escape of any unwholesome miasmata into the neighborhood.

An additional requirement that every cemetery shall be discontinued for burial purposes before it becomes unduly crowded, and shall never be built upon, would effectually prevent the encroaching of cities upon them, which Sir Henry Thompson anticipates will eventually make all extra-mural cemeteries intra-mural; so that, as he says, we are now "laying by poison for our children's children, who will find our remains polluting their water-sources when that now distant plot is

covered, as it will be, more or less closely by human dwellings."

In all cases where the number of interments is large, and especially in times of epidemic, the free use of disinfectants would be a valuable precaution. Lime has been largely used for this purpose in all parts of the world, and has always proved so effectual, that Baron Larrey, in 1870, advised its use in the *fosses communes*, describing its action as a "slow cremation." Charcoal has also been found efficient. Sawdust saturated with chloride of zinc, or carbolic acid, and strewn upon the body, is preferred by Prof. Parkes.* These agents retard decomposition, while quicklime greatly accelerates the process.

With the adoption of such precautions as these, burial would become an absolutely safe method. We would, then, have all great cities furnished with rural cemeteries upon their outskirts, while the old cemeteries that had originally been in the country, but at last, both surrounded by the extension of population and sufficiently full, would remain as parks, contributing, by their presence, to the health and beauty of the city. We fully concur with Mr. Holland in the belief that "it is a glaring abuse of language to speak of such employment of land as wasted, for it would be in the highest degree useful; and, the more dense the population becomes, the more evident and important will that utility become also." The objection to this plan, that it places the cemeteries at too great a distance, requiring the funeral procession to make a long journey, at a great expense, can easily be overcome by the use of special railway trains for funerals. Railway transportation is already employed at some of the cemeteries of London, New York, Philadelphia, Chicago and Cincinnati, and is just being adopted on a large scale in connection with the new Parisian cemetery at Méry sur Oise.

For the use of all persons in winter, and of the very poor at all seasons, houses of reception might be permitted in various parts of a city, where remains may be deposited by friends, and thence conveyed by night, by a corps of respon-

* Pract. Hygiene, p. 446.

sible men, to the cemetery. This would be but a slight variation from the present custom of consigning remains to receiving-tombs during the winter.

Should cremation be proved a sanitary necessity, its adoption would doubtless soon be acquiesced in by all intelligent people; but, until it is so proved, we can see no sufficient cause for changing the present system of burial, which is endeared to the hearts of all Christendom by ties of religion and sentiment, and which, as practised in the rural cemeteries of to-day, is not, if properly regulated, open to any reasonable objection.

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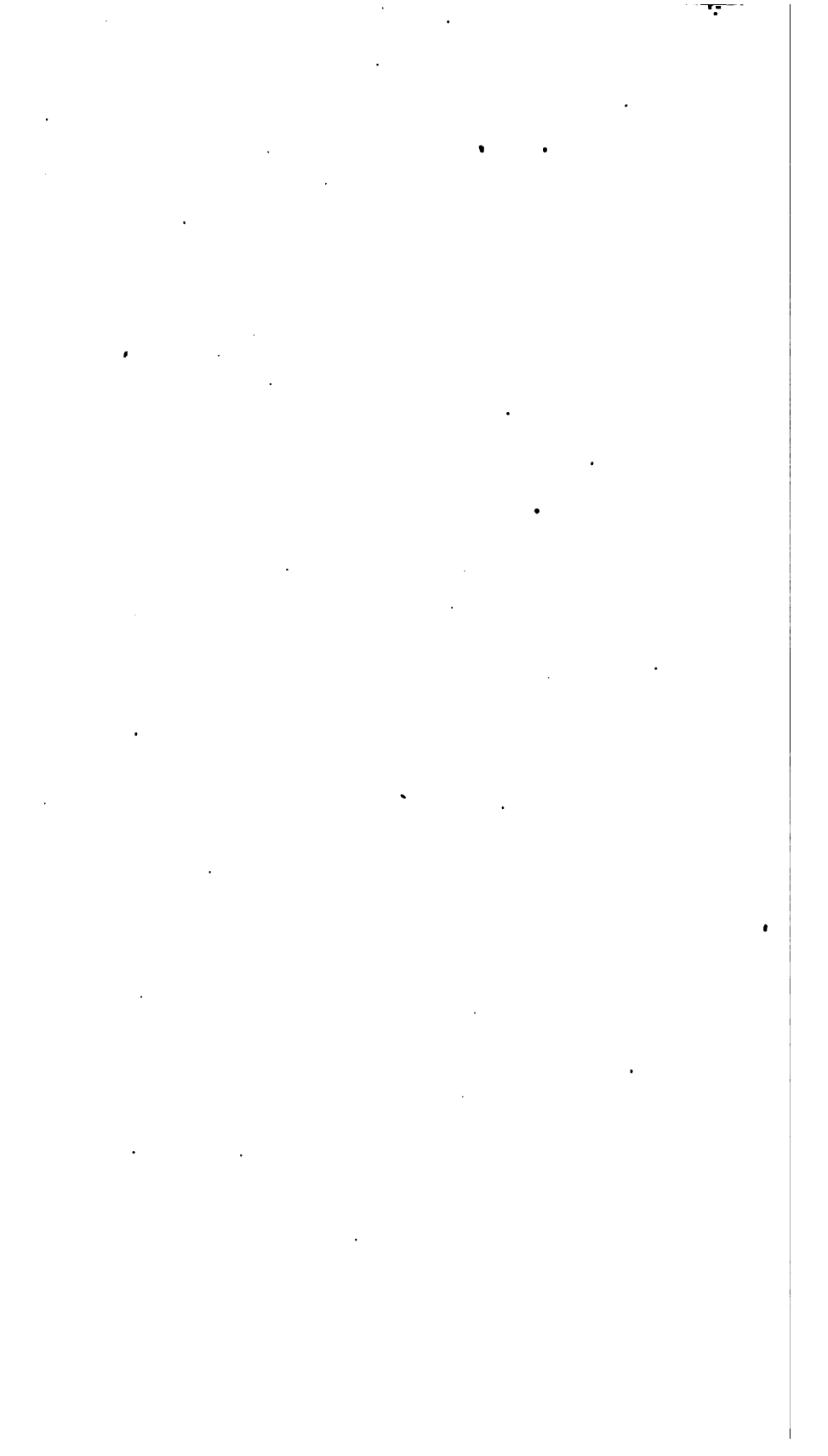
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HEALTH OF TOWNS.



HEALTH OF TOWNS.

Replies to our circulars have been received from one hundred and fifty-five towns,* and many correspondents have probably failed to answer, because they had only negative information to give. Their testimony as to the "avoidable causes" and "prevention" of diseases in their towns is as in previous years; and the importance of improvement in the hygienic conditions of a large number of dwellings, even in the smaller towns of the State, must be apparent even to the casual observer.

Our correspondents, with not many exceptions, report that an unusual degree of health has prevailed during the past year. There have been extremely few deaths from small-pox; typhoid fever has been in most cases of a very mild type, and less common than usual; and infantile diseases have been less fatal than in previous years, attributable, probably, to the absence of excessive heat during the summer months.

Early in the year, a severe epidemic of diphtheria appeared in Readsboro' and Whitingham, Vermont, in the valley of the Deerfield River, and, at about the same time, some severe cases were observed at Adams, in this State. From these two starting points the disease advanced slowly down the valley of the Deerfield, the towns of Florida, Heath, Coleraine, Greenfield, Leyden, and Conway having suffered especially. Arrived at the Connecticut, the epidemic spread chiefly along the western bank of that river, visiting West Springfield and Holyoke with some severity. On the eastern bank, Amherst suffered notably.

In the towns mentioned in the valley of the Deerfield, the mortality was very great, in some cases being as large as thirty

* One hundred and fifty-four were heard from last year. It is to be regretted that our returns are not more complete; but we give a summary of the general health of the State, as far as it could be ascertained, as possessing some interest.

per cent. of cases attacked; and in one village more than ten per cent. of the population suffered more or less severely. In these towns the mortality has been very much greater than from the epidemics which raged at the same time in New York, in western Germany, in some parts of France, and in isolated towns in other parts of our State. The absence of other diseases during the year was, in some cases, particularly noted.

Of the known elements in the causation or propagation of this disease, bad drainage and a saturated soil have often seemed the chief, while generally bad hygienic surroundings have been the apparent indication for unusual severity in the attacks, every single member of large families having suffered in some cases. It is worthy of remark, that the country flooded by the Mill River disaster did not suffer especially, although in the direct track of the disease. In three cases, the disease assumed a terribly malignant form in the immediate vicinity of decaying animal matter: first, near a slaughter-house; second, near the field where the offal was thrown; and third, close to the shed for rendering tallow. Some of our correspondents speak of the comparative immunity of the lower classes of foreigners from the zymotic diseases, although often living in most filthy condition. When such is proved to be the fact, it may be explained by the great infant mortality amongst them, acting like the exposure of the Spartan infants, and securing the survival of only the strongest.

In the southern part of Berkshire County, and also in a few towns on the eastern side of Worcester County, typhoid fever and scarlet fever prevailed. With those exceptions already mentioned, our correspondents from the middle and western parts of the State report general and unusual freedom from sickness.

In Essex and Suffolk counties, and in the eastern portions of Middlesex and Norfolk, there have been reported somewhat more than the usual amount of disease of the respiratory organs. In many places, there have been severe epidemics of scarlet fever and measles, and a few cases of diphtheria, generally mild.

In New Bedford, and its adjacent town of Dartmouth, there has been a severe epidemic of diphtheria, about one-third of the cases having proved fatal. In Seekonk, and the adjacent

towns of Pawtucket and Attleborough, scarlet fever in a severe form, and typhoid fever, prevailed. We think our correspondent is fully justified, from his own observations and from other evidence, in tracing a connection between severe forms of scarlet fever and the vicinity of decomposing animal matter, especially when the air is saturated with it from rendering establishments. With these exceptions, the health of Bristol County has been remarkably good.

From every town in Plymouth, Barnstable and Dukes counties, and from Nantucket, our correspondents, when heard from, have reported general good health, and no prevailing epidemic for any part of the year.

From many towns we have received statements as to the filthy condition of their slaughter-houses. Generally speaking, our correspondents think that meat sold in their markets is in good condition, although, in those towns which are supplied with cattle by rail, they think that there is avoidable suffering inflicted on the animals, to the detriment of their flesh as food.

The great annoyance and often serious injury to the sick from steam-whistles, have in many cases been complained of.

From Boston, East Boston, Holyoke, Amherst, Charlestown, Natick, Salem, Wakefield and Worcester, we have received suggestive statements in regard to sewerage and drainage.

As regards the unknown elements in the causation and propagation of the zymotic diseases, no new evidence is given. In the light of predisposing cause, during the prevalence of an epidemic, may be considered the occupancy of dwellings while the plaster is still moist (Seekonk and Conway).

Our correspondents call attention to the comparatively greater mortality in infants fed with any kind of artificial food.

From Somerville and Charlestown, are some interesting facts with regard to "Miller's River."

The population and death-rate of the cities and towns for 1874 are given where it has been possible to obtain them; and the tables of mortality will be of some interest.*

Those communications designated by an asterisk are from other than regular correspondents.

* See page 332 and also page 361.

Estimated Population and Death-Rate for each 1,000 Inhabitants, in Cities and Towns with a Population of 5,000 or over (as far as they could be ascertained), for the year 1874.

CITY OR TOWN.	Estimated Population.	Deaths per 1000.	CITY OR TOWN.	Estimated Population.	Deaths per 1000.
Boston, . . .	331,000	23.60	Woburn, . . .	9,600	16.26
Worcester, . . .	50,000	20.46	Malden, . . .	9,300	16.12
Lowell, . . .	49,000	24.12	Peabody, . . .	8,000	16.88
Cambridge, . . .	48,000	24.56	Marblehead, . . .	7,500	16.00
Fall River, . . .	44,000	26.75	Brookline, . . .	7,300	15.49
Springfield, . . .	33,000	18.33	Westfield, . . .	7,000	19.28
Lawrence, . . .	33,000	23.45	Natick, . . .	7,000	20.00
Lynn, . . .	31,000	20.45	Plymouth, . . .	6,500	20.93
Salem, . . .	26,000	19.00	Clinton, . . .	6,500	15.09
New Bedford, . . .	25,000	21.36	Medford, . . .	6,350	18.89
Chelsea, . . .	21,000	17.61	Hyde Park, . . .	6,200	20.96
Taunton, . . .	21,000	16.52	Wakefield, . . .	6,000	20.50
Somerville, . . .	20,000	24.20	Southbridge, . . .	6,000	16.00
Gloucester, . . .	17,000	21.94*	Abington, . . .	6,000	18.66
Holyoke, . . .	15,000	23.26	Andover, . . .	6,000	14.33
Haverhill, . . .	14,000	17.50	Leominster, . . .	5,500	13.63
Fitchburg, . . .	13,000	13.84	Framingham, . . .	5,500	12.36
Newburyport, . . .	13,000	19.15	Webster, . . .	5,300	17.17
Pittsfield, . . .	12,500	20.13	Dedham, . . .	5,000	16.04
North Adams, . . .	12,000	23.08	Millbury, . . .	5,000	16.04
Weymouth, . . .	11,500	12.17	Provincetown, . . .	5,000	16.02
Northampton, . . .	11,000	23.00	Spencer, . . .	5,000	16.00
Chicopee, . . .	10,500	22.47	Stoneham, . . .	5,000	15.04
Waltham, . . .	10,000	15.20	Watertown, . . .	5,000	17.04
N. Bridgewater, . . .	10,000	16.00	Danvers, . . .	5,000	20.04
Milford, . . .	9,800	21.02			

* Of these, 63, or 18.21 per cent., were lost at sea; excluding these, the death-rate would be 17.94.

Alford.—500—16.—Typhoid fever has been unusually fatal and whooping-cough very severe, with a considerable loss of life among young children. The causes lie perhaps, in some cases, in bad sewerage.

Amherst.—4,035—17.84.—There has been very little severe sickness during the year. An epidemic of roseola in the spring, simulating very closely both rubeola and scarlatina, dysentery (mostly localized), rather less than the usual amount of disease of the respiratory organs, and typhoid fever, have been the diseases most prevalent. Typhoid fever began early, and still prevails; the number of cases having increased quite markedly within a number of weeks. There have been also a few mild cases of diphtheria. Typhoid fever has prevailed in various parts of the town, and in some of the most healthy localities. The localized cases of dysentery were undoubtedly caused by drinking-water shown by analysis to contain organic matter. This town is indeed "beautiful for situation," but can never hope to attain cleanliness, until it ceases to drink in impurities from its old long-used wells, and, by some system of sewerage, washes out the filth from its midst.

Andover.—6,000—14.33.—There has been no form of disease especially prevalent this year. Consumption is always here, but no more in this than in other years.

Arlington.—3,500—21.71.—We have had an unusual number of cases of typhoid fever.

Ashburnham.—2,300—15.21.—Typhoid fever has been specially prevalent, due to imperfect drainage.

Ashland.—2,100—21.9.—I have had ten cases of typhoid fever during the last three months; only two of them I considered dangerously sick; the other cases were marked by peculiar mildness of symptoms. One patient, a boy of fifteen, was confined to his bed only nine days, and three others were sick in the same family with the same disease. I attended four patients of these ten in one other family. These cases all pursued a mild course. The father was taken sick first. He was in the habit of going to Boston once a week to market vegetables, and *might* have caught the disease there. They lived in a farm-house in the near neighborhood of extensive woodlands. The immediate sanitary surroundings of this place were no worse than in the common run of farm establishments. The barn and pigsties were six rods from the house. An *open sink-drain*, with its water striking into the ground, ten feet from the house, and a privy, forty feet from the house, were in a neglected condition. Drinking-water all right. In the other house, a pig-pen is twenty-five feet from the house, a privy is at the same distance, and neglected, as usual; and the sink-spout water strikes into the ground just outside of the house. Their drinking-water they get from one of their neighbors, and it is all right. The first one who was taken sick in this family was a little girl of seven years, who, for a long time, had never been from home anywhere but to school, and there had been no other case of the disease in that vicinity. In these cases, diarrhoea requiring medical interference occurred three times, and the bowels were almost regular, or approaching constipation, in four cases. One boy had a pulse-rate of 44, and his brother one of 48, during early convalescence. Lead-poisoning has been a not unfrequent disease in this town during the last six years. I have seen sixteen cases in a population of 2,500. The means of introduction to the system were as follows:—In A and his wife, through lead water-pipes. In B, once from lead water-pipes, and again from using a lead faucet in his cider barrel. In C, D, E, F, G, and H, from water which passed through lead pipe. In I, from an aqueduct about 450 feet long. In K, L, M, from cider drawn through a lead pipe in a saloon. In N, from ale drawn through a lead pipe. In O and P, from small beer drawn through lead pipe in a saloon. I have had other cases where patients had obscure, indefinite ailments, which I suspected to be due to lead.

Ashby.—1,000—11.—The sanitary condition of this town, the past year, has been good. No deaths during the first six months, and mortality light for the remaining part of the year. Only two cases of typhoid fever have occurred.

Athol.—4,500—10.66.—The past year has been very healthy and free from epidemics. There has been a tendency to chills and fever, closely resembling intermittent; the period of febrile action short, and followed by a sweating stage.

Attleborough.—Scarlatina prevailed last spring, and typhoid fever during the autumn. On account of manufactories, an unusual proportion of our inhabitants are between the ages of fifteen and thirty-five, among whom typhoid fever exists.

Barnstable.—4,800—12.50.—No diseases especially prevalent.

Becket.—1,347—15.5.—A malignant form of scarlatina broke out here last spring, and was so fatal among children as to cause death in a few days, and, in some cases, in a few hours. Among adults, it generally ended in recovery. Diphtheria has been very severe in towns near here, and very fatal, but only slight here.

Belmont.—No severe epidemics.

Berkley.—750—13.40.—The diseases which I have met for several years have seemed to me to assume more of a bilious nature than formerly. Perhaps diet and regimen may be causes to some extent.

Boston.—The mortality returns, for 1874, indicate a decided improvement in the general health of the city over that of the two preceding years. There has been no prevailing epidemic, and the deaths from phthisis, as well as from miasmatic diseases, fall below those of 1873. A death rate of 2.76 per cent., excluding the mortality from small pox, as shown by the tables for 1872 and 1873, and also excluding in the estimate the statistics of the three recently annexed towns, had declined to 2.42, a ratio below the average for five years, as shown by the following table of the comparative mortality of Boston for those years:—

YEARS.	Estimated Population, (exclusive of W. Roxbury, Brighton and Charlestown).	Mortality.	Per cent.	EXCLUSIVE OF DEATHS FROM SMALL-POX.		
				Mortality.	Per cent.	Average Mortality for 5 years.
1870, . .	250,576	6,098	2.43	6,098	2.43	} 2.59
1871, . .	258,041	5,888	2.25	5,888	2.25	
1872, . .	265,782	8,088	3.05	7,270	2.76	
1873, . .	273,755	7,869	2.84	7,567	2.76	
1874, . .	281,967	6,840	2.42	6,840	2.42	

The wards in which the highest death rate is recorded, as noted in previous years, are the 2d, 7th and 15th. In these wards, the population is mostly foreign, the streets are narrow and often filthy, and the dwellings small, dark and badly ventilated. The excessive mortality in the 15th ward from phthisis and miasmatic diseases is fairly attributable to the foul emanations from the low and imperfectly drained soil that has, for some time past, distinguished that precinct, and is suggestive of one of the probable causes of the high death rate of the city for the last few years. In their recent excellent report, the City Board of Health dwell at considerable length, in language not to be misunderstood, upon the dangers that threaten the city from this source, and urge the great importance of some complete and comprehensive system of sewerage, not unlike that now in successful

operation in London, by which the sewage shall be conducted in properly constructed channels to deep water. "The whole system as it now exists," says the report, "is clearly wrong. Our beautiful city is almost encircled by the mouths of sewers, discharging their contents into shoal water or upon flats, the sewer gases rendering the atmosphere, for some distance about the wharves, dangerous to breathe." The Stony-Brook sewer, with its two open mouths, and that at the foot of Otter Street, in full view of many of the houses that skirt the bay, and of the skaters and oarsmen who resort thither for health or recreation, still pour forth their thousands of cubic feet daily of the foulest sewage-matter, to be deposited somewhere in the western basin, tainting alike air and water. The termini of these sewers, in the words of the report, should be forever hidden from sight and smell.

It remains to be seen what measures the city will adopt to rid itself of these sources of discomfort and disease. For many years relief has been sought in vain, and it is impossible to conjecture how soon it will come. In the meantime, the penalty of this unpardonable indifference and penny-wise policy falls upon those who are helpless to avert it.

Perhaps the most startling statement made by the Health Board is "*that there are large neighborhoods in the city entirely destitute of sewers, or of any proper means of getting rid of their vault, sink or cesspool drainage.*" The sentence closes with the somewhat superfluous clause, "and much sickness exists in these places in consequence."

With these facts before us, notwithstanding the decline in the death rate, in a year unusually free from epidemic influences, there is still a significance in the words of the City Registrar, in his last report, that the situation "assumes a serious aspect."

East Boston.—29,550—18.4†—Since 1870, there have been great variations in the death-rate of East Boston from year to year. Between the years 1850 and 1870, the death-rate was quite uniform, seldom falling below 19 per 1,000 inhabitants, or rising above 21.3. There were two exceptional years observed. In 1855 the ratio was 23.6; in 1866 it fell to 17.2. Previous to 1850, the writer has not been successful in his efforts to find reliable statistics. The following table will show the number of deaths and the ratio per 1,000 for each of the years included in the table:—

	DEATHS.				
	1870.	1871.	1872.	1873.	1874.*
Population in 1870, . . . 25,484	513	414	790	610	499
Ratio per 1,000.†	20.1	15.6	28.6	21.3	18.4†
Deaths from small-pox, . . .	—	—	25	16	

* To December 1 (11 months).

† Nearly.

‡ The rate of increase of the population from 1865 to 1870 was 4.6 per cent. annually. It has been assumed that it has been 4 per cent. since 1870. If the number of deaths from December, 1874, should equal the average number for each of the preceding 11 months, the whole number for the year will be 644, and the ratio as given in the table.

The cause of these great variations in the death-rate from year to year is a subject of much interest and importance, and should receive more careful and thorough investigation than has yet been given it. So far as the writer can learn, from his own observation and from inquiry of those who should be familiar with the facts, no local nuisances nor imperfections in drainage or ventilation existed in the ward in 1872 that did not exist in 1871 and previous years; and there has been no material change in our drainage, or ventilation of buildings, or nuisances removed since 1872. The water-supply was, at times during that year, very impure, and offensive to sight, taste and smell. This fact led the writer to look in that direction for the cause of the great increase in the mortality that year over previous years. From 1850 to January 1, 1870, the water-supply of East Boston was from Lake Cochituate. Since the latter date, our supply has come from Mystic Lake. The first year of the use of Mystic water, the mortality was about the same as the average while using the Cochituate water. The second year, the ratio fell to 15.6,—less than any previous year. The third, it rose considerably above any previous year, and since that time it has been decreasing. Are there any peculiarities connected with the Mystic water to materially change its quality from year to year? Yes, there are. Those conversant with the facts are aware that the sewage of quite a large number of houses, the refuse of about twenty tanneries, one glue factory and one chemical manufactory are discharged into the pond or its tributaries. The refuse from the majority of these, as well as most of the sewage, is discharged into brooks, which, in dry seasons like 1871, do not flow; consequently, during dry times, the most of the sewage and refuse of the tanneries and other mechanical establishments are withheld from the pond until heavy rains wash the large accumulations of organic matter into it, to again vitiate its waters. One of the commissioners of inland fisheries, who has resided in Winchester, near the pond, for more than twenty years, has informed the writer that the water of the upper part of the pond became so impure, after the drought of 1871, as to kill a very large number of fish that ventured up the lake. He estimated the number of dead fish he saw floating upon the surface of the lake at that time, by millions. Is it not reasonable to suppose the water, that would destroy fish in such large numbers, would affect the health of those citizens who obtain their water-supply from that source? No one can doubt that there is danger to health in using water thus contaminated; and the danger will be greatly increased if the street-pipes are allowed to remain filled, or nearly so, with sediment, rich in organic matter, during the whole season, as ours were in 1872. As Chelsea, Charlestown and Somerville receive their water-supply from the same source, it becomes a matter of deep interest to learn whether their death-ratios had been subject to equal variations with those of East Boston. The following ratios of the aggregate deaths in the three cities will show that they have not. For convenience in comparing them, I will repeat those of East Boston:—

	1870.	1871.	1872.	1873.
Chelsea, Charlestown and Somerville, .	22.01	20.6	2.38	24.8
East Boston,	20.10	15.6	28.6	21.3

Had our investigations stopped here, these negative results would have led to the conclusion, that the large mortality in East Boston in 1872 could not be attributable to the impurities in our water. There are other facts, however, that are very suggestive and worthy of careful and thorough investigation. All of those cities use cement pipes in their streets for the distribution of the water. They are comparatively new, none having been in service ten years, and many of them considerably less. It is claimed for them, that crusts do not form in them, and that by use they become hard and smooth as glass, thus rendering it easy to remove all deposits from them by flushing. The service-pipes in East Boston are of iron, many of which have been in use since 1851. They are much roughened by tubercles and crusts containing organic matter, thus rendering it impossible to cleanse them. The heavy rains, which followed the drought in 1871, must have washed a large quantity of organic matter, that had accumulated about dwellings and the mechanical establishments above referred to, into the lake, and a portion of it found its way into the water-supply. In its passage through Somerville, Charlestown and Chelsea, to reach East Boston, the strong current would naturally prevent the deposit of organic matter to any extent in the mains of those cities, but would carry it forward to East Boston, which, being the end of the route, would lead to a dangerous accumulation in the pipes, unless they were frequently flushed.* This was the case in 1872, when the water was so offensive; and, although the attention of the Cochituate water board was repeatedly called to its condition, they were not sufficiently impressed with its importance to do anything toward its improvement. In the spring of 1873, a large delegation waited upon the board and urged that immediate measures be taken to improve our water. This led to the pipes being flushed. The water was improved, and our death-rate fell from 28.6 to 21.3, while, as will be observed, the death-rate of Charlestown and the other cities supplied from that source was increased. This year our water has been watched with greater care than it was last, and our death-rate still farther reduced. A table giving the number of deaths from each of the zymotic diseases for each year, and extending over a series of years, would be instructive in the study of this subject, but I have not found the time to prepare one.† The writer has, however, to satisfy himself as to whether his observation that sickness in the ward was not localized were correct, and also to learn whether change in the water-supply was attended with an increase of typhoid fever, caused a copy to be taken from the records of all the deaths in Boston from that disease from 1867 to 1873, inclusive, with date, number and street where each occurred. From this he finds that the number of deaths from that disease in East Boston was—

* With the exception of East Boston, the Mystic water-works are under the supervision of the Mystic water board. The writer is informed that the pipes under their charge were flushed early in the year 1872, while ours were not. May this not account for the discrepancy in the reports coming from Charlestown and East Boston as to the condition of the water that year, and also in part for the difference in their death-rates?

† I am glad to learn that the Registrar proposes to tabulate all the zymotic diseases by wards, in his future reports. This will greatly facilitate future investigations.

COCHITUATE WATER USED.						MYSTIC WATER USED.					
1867,	.	.	.	.	14	1870,	.	.	.	.	24
1868,	.	.	.	.	17	1871,	.	.	.	.	19
1869,	.	.	.	.	19	1872,	.	.	.	.	24
						1873,	.	.	.	.	31

These figures show that there has been an increase of the disease since the change in the water-supply. The statistics also prove that this disease has not been localized, but pretty evenly distributed over the ward. More of the deaths occurred, however, upon the lowlands than upon the highlands, where the drainage is apparently good, though the difference is not so great as was expected. Diseases of the bowels were quite prevalent here in 1872. It is to be regretted that accurate statistics cannot be given of those dying from these diseases, as accuracy in such investigations is of the utmost importance. That the Mystic water, at times at least, has an unfavorable influence upon the digestive organs, the writer does not doubt, as he has several patients under his charge upon whom one draught of it is frequently sufficient to bring on an attack of diarrhoea. A discontinuance of the use of Mystic water, unless it has been boiled, is sufficient with many to relieve derangement of the digestive organs, and to remove functional disturbance of the kidneys. The proposition to divert the sewage and refuse of the various mechanical establishments from the pond by means of proper sewers is the true policy, and it is to be hoped that the work will be commenced in the early spring, and be completed without unnecessary delay. This done, and the original purity of the Mystic waters maintained, they will prove, it is believed, very desirable for domestic use, and a valuable acquisition to the city. If East Boston can present a death-rate of 15.6 in 1871 and of 18.4 in 1874, when only a portion of the very objectionable organic matter above described is withheld for a part of the season from her water-supply, she may confidently hope to present a better record when *all* is diverted from it, and the distribution-pipes kept as carefully cleaned, as the above facts clearly suggest as being so essential to the preservation of the public health.

Brighton.—6,100—16.88.—I have had thirty-seven cases of typhoid fever in my practice during the past year. The causes are the improper construction of privy and cesspool vaults and a dry season, the latter favoring the passage of surface-water to wells in close proximity, in which the water was low.

Out of twenty-three persons who tried the *blood-cure*,* fifteen were females; more than two-thirds. The majority were born in the United States. All but two were between the ages of twenty and fifty; about one-half were married. Of the diseases, one-half suffered from disease of the lungs; anemia and general debility come next; dyspepsia, nervous debility and spinal trouble constitute the remainder. All could be classed as chronic, the patients having suffered from six months to ten years and upwards. Blood has been taken in quantities varying from one to eight ounces, over a period

* These investigations were begun at the abbatoir late in the summer, after the cool weather had driven away most of the patients; but it is hoped that they will be completed another year.

from a single day to six and nine months, and, in most instances, daily. As to taste, we find as many different opinions as there were individuals, nearly. Five likened the taste to that of new milk. In most instances where diarrhoea followed its use, it was in those diseases where we should naturally look for trouble in the bowels, and, besides, it invariably followed large draughts. In nearly all the cases, the fæces were dark. In two instances, there was urticaria. In twelve instances, there was an actual gain in weight, in one there was a loss, in ten nothing was said as to gain or loss. In the single case where the patient lost, she still claimed to be "feeling stronger." All but six, almost three-fourths, claimed to have been improved by the use of the blood. One was certainly injured thereby, having not wholly recovered from ulcer of the stomach. All but one of the six suffered from derangement of the bowels in the form of diarrhoea, that one was completely covered with urticaria. Four of the six were far advanced in phthisis; one died while on "blood diet," another lived but a short time after she discontinued its use. Of anemia, there were three evidently well-marked cases, in all of which the persons expressed themselves as much improved, as did also those suffering from general and nervous debility, which come under a single class, perhaps. Of twelve suffering from lung trouble, four were obliged to give it up; the remaining eight expressed themselves as feeling stronger, and they had gained in weight. So far, then, as these few cases go, it would appear that blood taken into the stomach does not act as a specific in any form of disease. As food, it is of great value oftentimes. All those suffering from anemia with whom I conversed were unable to take iron in any form. In one instance, the improvement was very great, and nothing but blood was taken. The report as to taste would lead one to infer that it (the taste) was no barrier against taking the blood. The idea of drinking fresh blood is the main thing to overcome. When there was diarrhoea, I tried to have them defibrinate the blood, and one of them agreed to, but I never heard from him again; others would not consent to continue its use. That so many gained in weight, is of considerable value; in most, if not all the cases, *they were suffering directly from inanition.*

[Our correspondent incloses a statement from another physician practising in Brighton, as follows:—]

(?) I have had fourteen cases of typical typhoid fever. Six occurred under circumstances which seemed to point directly to a local cause. They were in one house and attacked members of the same family. At the door of the house was a heap of filth, ashes, slops and human excreta, continually kept moist by daily additions of filthy liquids.

As several other families used water from the same well with this family and were not affected, I concluded that it was free from deleterious substances.

These patients seemed so habituated to their surroundings, that the fever seemed to produce less effect, and was of a milder type than those cases occurring in families whose circumstances allowed them every comfort.

Brimfield.—1,289—620—It has been a remarkably healthy year in this town; not more than one-half the usual amount of sickness. I have had nearly every year a generous number of typhoid fever patients, but this year has been an exception.

Charlestown.—32,800—21.12.—(“) The following facts in regard to the subject (i. e., the bad smells complained of in the city) are, I think, un-

disputed; first, that the odor in question is seldom complained of or noticed in the daytime, except by persons passing near the Mill Pond or Miller's River; second, that it is generally noticeable after sunset, at low barometric pressure of the atmosphere, and when the air is dense and muggy; and third, that few complaints concerning it have ever been made in cold weather. This last fact has an important bearing upon the question as to whether slaughter-houses are the sole cause of the nuisance. Upon this question, I desire to state the following facts, which have come within my own experience. For the past fourteen years, my professional duties have called me out a great deal in the night-time, and at all hours of the night. The bad smell, of which so much complaint has been made during the past three years, is nothing new, for I have noticed it and observed its peculiarities for the last twelve years or more, though not to so great a degree formerly as at present. My house stands at the corner of Main and Green Streets, in the Charlestown district of Boston, nearly on a level with the plain which extends from Main Street to West Newton. This plain contains many thousand acres. A considerable portion of it is densely populated; other parts are now occupied as tanneries and various kinds of manufacturing establishments, while other parts still, are covered with stagnant water, and open basins containing the deposits from sewers, and all manner of filth, from which the vilest odors are emitted. The hot rays of the sun, during the day, fall upon these open flats and stagnant waters, heating them to such a degree, that they exhale these odious gases, but the atmosphere dilutes and dissipates them, so that they are not noticed. But, after sundown, a rapid condensation of moisture from these places, forms a dense, damp atmosphere, which hangs over all this flat territory, rising to varying heights, according to the density of the air. A fog-bank, as it were, is formed, holding in solution, and retaining by its cohesive particles, all the gases and nauseous emanations which rise from tanneries, from Mill Pond, and open sewers, and in fact from every other source which emits the most unpleasant odor. This state of the atmosphere, I have frequently noticed, in going from my house to the top of Bunker Hill. The first breath of pure air is easily recognized as one emerges from this fog-bank. These gases, which are held down by this dense moisture, are cumulative, and are, therefore, more intense in the latter parts of the night; and, towards morning, a breeze springs up from the south-west or west, and wafts this fog-bank, freighted with its noisome gases, over our city, filling our houses, for half an hour or more, with its moist, intolerable odor. This I believe to be the true cause of our complaint. To remove one pork manufactory, would be removing but a tithe of that cause. To ascertain the whole cause, we must look to the tanneries along Canal Street, in Charlestown, the Mill Pond, the open sewers near the prison, Miller's River, and, in short, to all the collections of filth between Charlestown and Brighton. The trouble has been greatly aggravated, during the last few years, by the introduction of Mystic water into Charlestown and Somerville. Before this occurred, the out-houses in these places were properly emptied and the contents taken away; but now nearly every house has a water-closet, the contents of which are carried into the sewers, and thence discharged into open basins, or deposited on the flats, and there allowed to remain. To effect a remedy which shall be of any avail, the flats alluded to should be filled, the system of sewerage reformed, so that the contents thereof may be discharged in deep water, and all the establishments which can be proved to contribute perceptibly to the annoyance, be treated alike, and alike removed.

Chelsea.—21,000—17.61.—I think that in our city, for the past year, there has been less acute disease or sickness of any kind than for the year previous. Our city government has been doing considerable (not all that could be wished) within the present year to improve our drainage, and have filled up places on the marshy land in order to get rid of stagnant water. I also think the plentiful supply of water contributes towards diminishing sickness.

Clinton.—6,500—15.07.—Dysentery prevailed during August and September. Many cases were long in their duration and of a typhoid character.

Coleraine.—1,750—22.85.—Scarlet fever and diphtheria have prevailed to a considerable extent, and in a malignant form. I think that this has been in a measure owing to the state of the atmosphere, as they have not occurred so generally when fair weather was prevailing. Diphtheria was most fatal in two opposite sections of the town. In the first, the people lived on a high hill, *had been using swamp-water for culinary purposes*, and were generally very filthy. In the second section, the people were living on the bank of Green River, but I could ascertain no special cause for the outbreak and severity of the disease.

Conway.—1,400—27.85.—Conway lies west of the Connecticut River, is one of the second tier of towns, and is very hilly and dry, having no marsh land or swamps within its limits. A rapidly-running mill-stream courses through the town, on the banks of which are located one woollen-mill and two cotton-mills, which, with other kinds of business carried on, give support to a population of, perhaps, in the village, from four to five hundred inhabitants.

The year just past, had been unusually healthy; less than the usual average of deaths having occurred, previous to October. Reports had reached us of the prevalence of diphtheria in a number of towns at some distance to the north and west of us, in the towns of Readsborough, Whitingham, Coleraine, Leyden and Greenfield, when suddenly, and quite unexpectedly, about the middle of October, three children, in as many different families, living at a distance of half a mile from each other, and having had no particular communication with each other, were almost simultaneously attacked with a very malignant form of the disease, manifesting itself in severe inflammation of the tonsils, and of the parotid and sublingual glands, followed very soon with the white membranous exudation, covering the tonsils, fauces and palate, and often extending into the nares. The first death occurred in a girl ten years of age, and no local cause could be ascertained for the appearance of the disease, the hygienic condition of the house having been remarkably good. In a few days, a child of one of the other families fell a victim to the disease, and all the members of the family (six in number) were soon affected with the complaint, except the youngest, who was taken away to a neighbor's house. A second child in this family soon died, and after a short time the others became better. The house was thoroughly cleansed, lime-washed, painted and thoroughly aired, and after a time the young child was brought back to her home, but within two days she was taken sick and died in a few days. If there was any local cause here, to excite disease, it must have arisen from the fact that the tallow (often quite old and rancid) from a slaughter-house in the village was brought here to be stored in a small building in direct communication with the house, and "tried" in a little shed close by. The scraps and offal

were fed to hogs under the barn, which was in close proximity to the house. The third family, attacked at about the same time as the other two, lives on a hill at a distance of a half mile or more from the others. Here the disease assumed a very malignant form. The whole family, seven in number, were attacked. The mother contracted the disease by inoculation of a small prick in the finger, made by a splinter. Inflammation spread very rapidly up the arm, and terminated in gangrene and death in about twenty-four hours. Two children died soon after, but the other members of the family recovered. A sister of the father of the family, who came from a distant town to assist in the care of the sick, also contracted the disease by inoculation, while washing for the sick, went back to her home, and, after two or three weeks' suffering, died. Two sisters of the mother came to the funeral of their sister, from the town of Montague, fifteen miles distant, took the disease, returned home and soon died, as did also two or three others of their families. From this beginning, the disease has extended to numerous other families in the vicinity, four families having lost three members each, one having lost two, and others one each, until there have been twenty-one deaths; and the whole number of cases, of greater or less severity, have amounted to between seventy and eighty. The epidemic seemed to have spent its force in about six weeks; but there are still occasional cases occurring, mostly of a milder and more manageable type. What is remarkable in this epidemic,—all the deaths, and all the cases of any degree of severity, have occurred within a space of one mile from east to west, and one-fourth of a mile from north to south; although a very considerable proportion of the population of the village live outside of those limits. Another curious circumstance, is the fact that within these limits there are four tenement-blocks, filled with Irish and French-Canadians, living in the closely-packed way customary in such blocks, and yet they have almost wholly escaped the disease. There seems to be no satisfactory local cause for its severity within the above limits, unless it be, as some have supposed, that the business of slaughtering, which has been carried on for a number of years past in that neighborhood, has had a deleterious effect. It is true, however, that the families nearest to this establishment have not been affected, and the family of the owner, living in the upper story of the building where the slaughtering is done, have escaped the disease. A great deal of pains is taken to carry away the blood and offal to be fed to hogs, on a lot at some distance out of the village, but not far from the house of the family so malignantly diseased in the first breaking out of the epidemic. Other families, however, still nearer this locality, wholly escaped. Those who have suffered most severely, as a general rule, have been those families which have been least regardful of ordinary hygienic rules, who have a particular antipathy to soap and water, pure air, etc., and who are without comfortable clothing or generous diet.

In one house, where there were three deaths, there was no ascertainable cause of disease, except that the walls had been but recently plastered, and were still soft and damp.

The treatment most effective in my hands has been the tonic and stimulating. The larger number of fatal cases have been in young children from two to six years of age.

Dedham.—5,000—164.—Unusually healthy.

Douglas.—"Grinder's Consumption" is always prevalent here among the operatives.

Dover.—Consumption is prevalent (five fatal cases), one to every one hundred inhabitants. Three of those who died of consumption were children of an intemperate father. Otherwise, the town has been unusually healthy.

Dracut.—1,400—20—No sickness worthy of note.

Dudley.—The healthiest year for twenty-three years.

Eccett.—3,800—16.84.—Pneumonia has been prevalent; due to improperly drained cellars near low marshes. One case of diphtheritic ophthalmia.

Fitchburg.—13,000—13.84.—The season has been more than usually healthy. Early in the spring, scarlatina appeared in a mild form. Late in the spring and early in the summer, inflammation of the bowels occurred in different sections of the city. During the summer and autumn months sybotic diseases have been less prevalent than usual.

The cases of scarlatina, for two or three years, have been more numerous and more severe in character in a section of our city located on shaded and springy land.

Florida.—This a small town upon the top of the Hoosac range of mountains, with a sparse population, almost entirely agricultural. There has been a number of cases of the prevailing epidemic of diphtheria here, with a greater average mortality than in Adams. The hygienic arrangements of our mountain towns are nearly all the same, and with little prospect of improving them.

Grafton.—4,500—12.88.—There has been much less diarrhoea and dysentery and typhoid fever than usual, during the summer months; nearly all the cases that have come under my observation have been of a mild type.

Granby.—863—12.75.—There has been an unusual number of cases of typhoid fever this fall; all recovered, and there were no severe cases. Supposed causes are an unusually wet spring, and decay of vegetation in the fall. Many years ago, typhoid fever was quite prevalent; now we do not often have a case. I think the improvement is due to improved drainage, and increased knowledge of sanitary laws among the people. Sickness has diminished 40 or 50 per cent. during the last twenty-five years.

Great Barrington.—Typhoid fever, of a mild type, has prevailed, due to bad drainage; wholly preventable in a very easy way.

Greenwich.—660—10.6.—We have had a most remarkably healthy year,—not one case of typhoid fever, where in previous years we had twenty. When typhoid fever has prevailed to any great extent, it was easy enough to trace the disease to causes in the immediate vicinity, usually from defective or no sewerage, as in Gilbertville, where a manufacturing population of nearly one thousand souls are crowded into tenement houses, without any sewerage whatever, and with their privies and wells in juxtaposition.

Heerhill.—14,000—17.5.—We have been unusually free from any special forms of disease during the year.

Hingham.—4,450—16.85.—No epidemic has visited us this year. There were

a few cases of typhoid fever, confined to the foreign population. The houses in which these cases occurred are in the worst part of the town, hygienically, although, for the locality, not poor houses.

Hopkinton.—4,500—14.44—Rheumatism has been specially prevalent. Several sudden deaths have been referred to rheumatic inflammation of the heart.

Holyoke.—15,000—23.26.—Holyoke has been nearly free from epidemics during the past year, and the general health of the city has been far above the average. This entire valley has been unusually exempt from all forms of disease. Summer came and went unattended by the diseases often present at that season. There has been a marked absence of those complaints that destroy the lives of so many young children during the hot months. In the fall, we escaped our annual visitation from typhoid fever, except in a very limited portion of the city, to which I shall refer further on. One cause for this improved health may be in the new and abundant supply of pure water from natural mountain-ponds. Formerly, the water for domestic use was pumped from the river into an artificial reservoir in the midst of the town, and thence distributed to the consumers—not always in very generous quantity. No sewers emptied into the river above where the water was taken out; but the conformation of the ground was such that the “surface-wash,” after a rain, must sometimes have found its way into the river, and thence into the stomachs of the people. Now, this is all changed, and the pure stream flows directly from the mountain-reservoir to the door of every citizen. Soon after the organization of our new city government, the more important hygienic rules and regulations were adopted, and have been enforced with commendable promptness and efficiency, while formerly matters of this nature had been conducted in the usual easy, “slipshod” manner characteristic of small villages and sparsely-settled towns. As a result, our streets and alleys, in the main, have presented a clean, tidy, wholesome appearance. But little difficulty has been experienced in enforcing the new laws, and the end attained is a higher standard of health, with a lower mortality-rate. At present (December), diphtheria and scarlet fever are somewhat prevalent, though in not very severe form. They first appeared about three weeks ago—here and there a case. Now, they are pretty generally scattered over the city. Each is occasionally met with alone; but more usually the diphtheria is a sequence to the scarlet fever. I have often seen this condition in solitary cases, but never before so constantly as in the present epidemic, for such this may now properly be called. Thus far, very few cases have terminated fatally. During the months of August and September, typhoid fever was very fatal in a small portion of the city, occupied exclusively by foreigners. It illustrates in such marked degree the cause or origin of the fever, that it seems proper for me to give a somewhat extended account of it. Some twenty-five years ago, while building the dam across the river at this point, the laborers—mostly foreigners—made homes for themselves and families on the bank above the dam. They have always retained possession of this locality, and their numbers have been constantly increased by the arrival of friends of their own nationality. The territory is nearly level, divided by a slight depression, through which the surface-water, in spring, and after heavy rainfalls, was discharged into the river. Gradually and imperceptibly, but steadily, this natural outlet for the surface-drainage had been closed up by the necessary filling-in of house lots and grading of streets, so that a cesspool of

no inconsiderable dimensions was formed in the immediate neighborhood. A sewer in this locality had been out of the question, because the formation of the ground was such that it could only discharge into the river a few rods above where water was obtained for domestic uses for the whole city. For years, the surface-water, and the drainage from privies, pigsties, and out-buildings of every description had accumulated in this cesspool. As soon as the new water-works were completed, a sewer was built, and this mass of liquid putrefaction was discharged into the river. But, through neglect, or forgetfulness, on the part of those intrusted with the work, the bed of this pool, reeking with filth, was left uncovered and exposed. A few days of hot sunshine and warm air sufficed to reveal its poisonous character. It was thickly inhabited on all sides by the poor and ignorant. Typhoid fever broke out almost in a day all around it, and in nearly every house could be found one or more cases. As might be expected, it proved terribly fatal. In a space but a little larger than a city square, nearly a score of deaths resulted. It seems to me there can be but one opinion as to the cause or origin of the disease here. In a population of nearly fifteen thousand, only one or two cases of typhoid fever are known to have occurred outside of this locality, while, within the district, almost every inhabitant suffered from the influence of the poison.

Leicester.—1,800—17.77.—There has been rather more of typhoid fever and dysentery than usual.

Lawrence.—33,000—23.45.—This city has enjoyed an exceptional immunity from epidemic diseases during the past year. In December, scarlet fever and diphtheria were somewhat prevalent.

Leicester.—2,800—14.64.—Typhoid fever has been specially prevalent this year. In one part of the town, two shallow ponds have been drawn off, for the purpose of preparing dams, and it was here that the fever prevailed.

Lenox.—2,000—20.—During the months of July and August, there was more sickness among young children than usual, principally diseases of the bowels. The deaths, three in number, occurred in infants artificially fed. During the latter part of August and September, typhoid fever was prevalent. There were four cases, of which two were fatal, in two houses of the better class. The privies and wells of these houses are so situated that leakage from the former into the latter seems inevitable.

Leominster.—5,500—13.63.—Typhoid fever prevailed to a limited extent from August to November. The patients were young, from twelve or fifteen to twenty-five years of age. They were all, with but two exceptions, isolated, only one member of a family being affected.

Leverett.—800—13.75.—No typhoid fever this year; last year, it was quite prevalent. It is remarked by all physicians in the vicinity, that an uncommon state of health prevails.

Lincoln.—800—13.75.—In March and April, scarlet fever prevailed, in some neighborhoods malignant; in November and December, diphtheria and influenza and inflammatory sore throats were common.

Lowell.—49,000—24.12.—From January 1, 1874, to January 1, 1875, there

were 96 deaths from scarlet fever, out of a total mortality of 1,147. Next to that of the year 1868, when there were 95 deaths out of a total of 857, this is by far the largest annual percentage of fatal cases of scarlet fever for at least fourteen years. The average number of deaths during the ten years preceding 1874 was 31, out of an average mortality of 841. The greatest mortality from it last year was in the fall, especially in the month of October, when there were 17 deaths. Fifty-one of the fatal cases were buried this year in the Catholic cemetery, and last year 37, out of a total of 44. The present epidemic began in the spring of 1873, and has continued, without any marked abatement, since then. It is believed that the disease has been more generally diffused this year than last. The malignant form has not been so common as in 1873, when, especially in the fall, a large number of cases of this sort occurred in a district noted as unhealthy by me last year. The number of deaths from cholera infantum, so called (a large proportion of the diseases classified under this name being inaccurately named), from January 1, 1874, to December 1, was 128, against 89 during the same period in 1873, and against an average of 49 deaths during the ten years preceding. This is by far the largest number of deaths from this disease ever known in the history of this city. Of these 128 fatal cases, 94 were buried in the Catholic cemetery and 34 in the others. In 1873, 53 out of 88 were buried in the Catholic cemetery. In looking over the records of deaths for 1871, 1872, 1873 and 1874, I find that, out of an aggregate of 339 deaths from this disease, only 8 occurred in children over two years of age; so that we must put the limit of age in Lowell at two years and under. The percentage of deaths from cholera infantum in children under two years of age, in the year 1871, was 13 per cent.; in 1872, 24 per cent.; in 1873, 20 per cent.; and in 1874, 36 per cent. I cannot demonstrate any special cause for the unusual prevalence of certain diseases during the past year; but I cannot forbear stating, even though it be a trite remark, that the greatest amount of disease has existed where the hygienic conditions are the poorest. This statement is illustrated by the vast preponderance of sickness among the foreign population, notwithstanding their peculiarly rugged constitutions, and by the history of cholera infantum in Lowell during the past year, since the increase of this disease has been confined during this time to the lower classes. For eight years preceding 1870, the average annual mortality from this disease was 33. In 1870, the number of deaths suddenly went up to 70. This sudden increase was apparently due to the early appearance and steady maintenance of a high temperature. This was the hottest summer for the past thirteen years. It is a well-established fact that infants confined strictly to a diet of breast-milk are more exempt from disturbances of digestion than those artificially fed. An excess of food, even of the best sort, is injurious. Among the articles which I have known to be put into the stomachs of infants between the ages of three and twelve months are baked beans, boiled corn, pickles and mince pie. A certain nurse made the remark, as an illustration of the care with which she brought up her children, that she never thought of giving them beans until they were three months old. We have in Lowell an institution in which children are taken care of, whose mothers are unable, from various causes, to look after them; and, during the past summer, there has been no sickness of any account in it. The city physician of 1871 says, in his annual report for that year, that the decrease in the mortality from cholera infantum was doubtless owing to the labors of the old board of health in seeing that the streets, alleys, etc., were thoroughly cleansed, and the utmost care used to

prevent the crowding of the poor into unhealthy, miserable and ill-ventilated houses or places. I am inclined to think that, if we had had scarlet fever hospitals in 1873, the epidemic which took place in the autumn of that year might have been prevented.

Lynn.—31,000—20.45.—Scarlet fever was quite prevalent and of a malignant type during the first quarter. Typhoid has been and is prevalent, but not unusually so. It prevailed during the dry weather in September, subsided on the occurrence of rains the last of that month, and started up again as the drought returned. Many people persist in drinking well-water in the thickly-settled part of the city, where it is unfit for use. There is an abundant supply of pure water, so that the wells need not be used.

Malden.—9,300—16.12.—Typhoid fever has been unusually benignant in its type.

Marblehead.—7,500—16.—This town has been remarkably healthy during the last year. Parotitis has been very prevalent, with very few cases of sufficient severity to need the care of a physician. Occasionally, a case has been complicated with pneumonia. No diphtheria.

Millbury.—5,000—16.4.—We have had considerable typhoid fever. I cannot say that it has been especially prevalent this season. *There has been a decided tendency to intermit, which has not been usual in this vicinity. Cause of the disease,—filth about our tenement houses.*

Montague.—3,000—24.—An unusually healthy season.

Needham.—4,100—12.19.—From the middle of February to the first of May, pneumonia and scarlet fever were quite prevalent. In August and September, typhoid fever prevailed, a number of cases having been traced to the use of drinking-water contaminated by a broken drain.

Natick.—7,000—20.—Typhoid fever prevailed during the late fall, and scarlet fever the whole season. Five cases of typhoid occurred in one court, surrounded by fourteen (or thereabouts) privies.

Newburyport.—13,000—18.31.—We have had less sickness than at any time for ten years. In the spring months, we had but few cases of lung disease, and, during the summer, not one-half the usual number of cases of cholera infantum and dysentery. In September, October and November, typhoid and scarlet fevers, both of a mild type, have prevailed in a moderate degree.

North Adams.—12,000—23.03.—Diphtheria has prevailed in this locality for the past year as an epidemic; but this term has been applied to any existing affection of the throat quite too commonly.

The cases well marked by the diphtheritic exudation in the larynx, have been few in proportion to the multitude that exhibited the pharyngeal form. These latter have been in many cases severe indeed, extending over the posterior part of the pharynx and palate; but the fatality resulting from this fever has been comparatively light.

The mortality has been great when the larynx was involved. In some cases, death seemed to be the result of oedema of the glottis.

Of its causes, I know nothing. All classes and conditions appear equally subject to its influence, as also do all localities.

North Reading.—1,050—10.47.—Typhoid fever has been a prevailing disease to a greater or less extent for the past six years. Nine-tenths of this town is swamp and river-bottom not covered by water except in winter. Some cases have occurred from foul drinking-water, sink-drains, pigsties and privies too near wells.

Otis.—Our diseases are of a malarial type. We have a large area of ponds and a great deal of standing water.

Palmer.—There has been no form of disease prevalent this year. I have known no year so healthy for twenty-five years.

Peru.—450—8.88.—A large number of cases of diphtheria, in proportion to our number of inhabitants, have occurred during November. Some have proved fatal. It is noticeable that, as a rule, the most severe type of the disease is seen, and the fatal cases have occurred in those families thinly clad and poorly fed.

Quincy.—It has been a remarkably healthy year. We had a slight epidemic of scarlatina in the spring, with but few deaths, however.

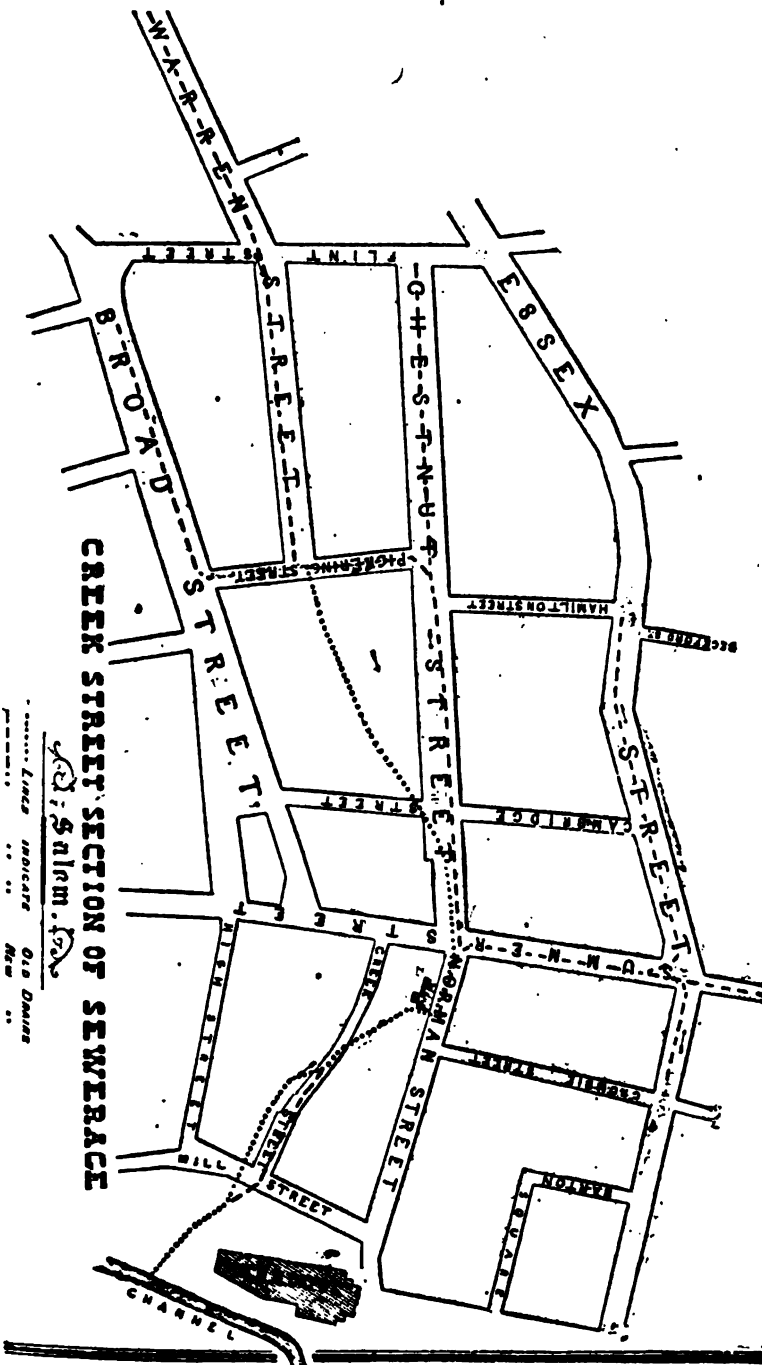
Randolph.—4,000—15.75.—We have had no epidemic in this town or vicinity for more than one year. When we have had typhoid fever to a great extent, I am of the opinion that it was caused by bad drainage. Improve the drainage and sewerage of our towns, and many grave forms of disease would disappear.

Raynham.—1,700—14.11.—During the past year it has been unusually healthy. I have seen few cases but chronic ones in this town for the past year.

Reading.—The season has been a healthy one. There have been some cases of typhoid fever, but mostly of a mild character. This disease is often, in my opinion, due to filthy surroundings,—sink-drains, privies, and wells contaminated by them; and especially am I suspicious of the latter, but cannot always discover anything of the kind in fault.

Salem.—26,000—18.15.—In September of the past year, in a house upon Norman Street, there occurred two cases of sickness and death from typhoid fever. They were the fulfilment of expectations and the justification of predictions. The air of the premises had been made notably offensive and dangerous to life by emanations from a defective sewer. This sewer, although not recently constructed, had been made to form a part of a new system. The defect was gross. The bereaved father (too late to save his children) requested the aid of the city authorities to make his home habitable and to protect his property. This action, together with a public hearing given by our board of aldermen to owners of property, with reference to laying sewers, has given a painful vividness to these tragic illustrations of the dangers arising from imperfect sewers, and has excited a desirable interest in the causes which led to these deaths.

The circumstances relating to these cases of sickness are very instructive: I therefore report them. To assist the reader in understanding the following statements, I refer to the accompanying plan of the Creek-street section of sewerage.



Three-quarters of a century ago, the greater part of the territory bounded *on the south* by that portion of Broad Street which lies between Cambridge Street and Flint Street, *on the west* by Flint Street, *on the north* by an irregular line running from the junction of Flint with Essex Street, to the corner of Cambridge and Chestnut streets, was in a condition so different from its present, that, where now are the homes of the wealthy, frogs piped their simple melodies in praise of mud of velvet softness, and nestled sympathetically by grasses and rushes which enjoyed, like themselves, an aquatic home. In brief, it was a swamp, which had near its centre, in common with Boston, a "frog-pond." Water from this swamp and pond found an outlet through a water-course, whose direction is indicated by the dotted line on the accompanying map. The projection of this line between Summer and Crombie streets indicates a branch from the water-channel which drained a portion of land lying between these streets. The direction of this water-course was in part determined by a hill of moderate height and gentle inclination, whose northern slope is now the land bounded *on the north* by the southern side of the western third of Creek Street, and about five hundred feet of the eastern section of Broad Street; *on the east* by an irregular line drawn from the junction of the western with the middle third of Creek Street, to the corner of Mill and High streets. Creek Street occupies about the centre of what was once a salt-water cove, the shores about which were used as a ship-yard, known in olden time as "Knocker's Hole," because of the noise made there by the incessant hammering of ship-carpenters and caulkers. Mill Street, near where the Eastern Railroad depot now stands, was, fifty years ago, the boundary of a salt-water creek. A gentleman of sixty years tells me that he well remembers vessels lying by Mill Street, whose bowsprits projected over the street. The space where these vessels then lay has been made solid land, considerably beyond the border of the channel marked upon the map. The channel itself is a covered course, through which the sea-water ebbs and flows, on its way to and from a large pond which lies farther to the south.

When all the low land of this region was made habitable by filling it in with gravel, the water-course (indicated by the dotted line) was unfilled for several reasons: First. It was recorded in deeds as a boundary to estates and so could not legally be interfered with. Again, it was needed to drain excessive moisture from the land. Moreover, it could be used as a drain to convey refuse waters from the houses. It was protected, therefore, in various ways, according to the fancy of the owners through whose estates it ran. In places, its bottom and sides and cover were of loose stones. Elsewhere, its bottom and cover are of plank and its sides of stones. It was everywhere loosely built, with regard chiefly to its uses as a drain rather than a sewer. Its calibre was irregular and varied from twelve to twenty-four inches square. It ran under the back-yards of houses on Chestnut Street, until, near Cambridge Street, it passed directly under a house on the corner of these streets. It was covered several feet below the surface as far as the point on Norman Street, where it turns a right-angle to run south. Here, where it runs between two houses about three feet apart, it for many years remained uncovered, until, upon the petition of the abutters, the city, twenty or more years ago, covered it with plank. This decaying, it was several years ago re-covered with flagstones with loose joints. The bottom of the drain between these houses was about a foot below the earthen floor of their cellars. *The cellar-walls of loose stones formed its sides.* From Norman Street to Creek Street, the top of the drain is quite superficial. Its covering of stones is

hardly concealed with earth. During this part of its course, it runs under one corner of a house-shed and under a barn. In former times, great care was taken to keep the various natural water-courses of the city free from obstruction. At one time, we are told, Col. Perley Putnam (then a city official) took a posse of men to remove a privy which had been so placed that its droppings would enter this water-course. But, when water-closets came into extensive use, what had been intended for a simple drain was used for a sewer. Without misgiving, this miserable structure was trusted for many years, and by some is still used to convey sewage-filth, not merely closely by, but under dwellings. After a time, the occupants of the house on the corner of Chestnut and Cambridge streets were annoyed by offensive odors, which were traced to this drain, and effectually shut out by very thoroughly cementing the cellar-floor. During the years 1868 and 1869, the city built, with cement-pipes, a substantial sewer of large capacity, through Warren Street and Pickering Street to Chestnut Street, where it was made to enter pipes which were then laid from the head of Chestnut Street to the head of Norman Street. Similar pipes were laid under Essex Street from Beckford Street to Summer Street, and from Crombie Street to Summer Street. Then, the pipes continued through Summer Street to meet the Chestnut-street sewer at the head of Norman Street. The broken line on the map indicates the course and direction of this new sewer, which was completed by August of 1869. It was the intention of the engineer to have the pipes laid through Norman Street by the most direct course to a deep channel. But the abutters on Norman Street did not wish to be assessed for this new work, and the city authorities were unwilling to assume the whole expense. As a matter of economy, therefore, the very large body of sewage and surface-drainage brought by the new pipes to the head of Norman Street, were made to enter the weakly and loosely guarded water-course we have described, and which is indicated by the dotted line running irregularly from Norman Street, across Creek Street to Mill Street. From Mill Street, large cement-pipes were laid to the channel. The terminal pipe close to the bottom of the channel is uncovered only at extreme low water. It was soon found that, owing to obstructions or deficient calibre in the old drain crossing Creek Street, the water could not be rapidly enough delivered. After heavy rains or showers, waters which could not be discharged, backed up through the culverts on Norman and Chestnut Streets, so as to make the streets impassable and to flood cellars on Norman and the lower end of Chestnut and Summer streets. To remove this difficulty, new and large pipes were laid from the upper third of Creek Street to Mill Street, and thence to the new pipes already laid to the channel. This secured a more rapid emptying of the pipes and partially removed an alarming source of danger from the reflux of sewage into the yards and cellars of dwellings. But, as will be seen, the rising tide passes up into the sewer and at its height reaches a point near Norman Street. This retards the sewage flow, drives back the foul gases and compels their escape at defective points. The dangerous situation of the two houses, whose loosely-built cellar-walls formed now the sides of so large a sewer, can be seen. The occupants of the western house, after much annoyance, in self-defence sought aid from the city. Thereupon the authorities built a wall of brick and cement inside the cellar-wall. This shut out the odors from that cellar. No such precaution was taken in the eastern house. Soon, those living near the drain were annoyed by the odors which escaped through the uncemented joints in the flagstones with which it was covered. In warm weather, rather than suffer the stench with

which they were sure to be assailed if they opened their windows toward this sewer, they kept them closed. On complaint made, the loose joints in the sewer-cover were cemented. But the cementing of the cover compelled the sewer-air, when driven back by the rising tide, to escape through the culverts into the streets, at points quite distant, and through the loosely-built sides into the houses. How easily this occurred, is seen from the fact that the eastern house was at one time filled with the odor of carbolic acid which had been thrown into the sewer, through a sink-pipe from the western house. Last fall and summer, two persons, a young man of eighteen years and a young woman near the same age, son and daughter of the occupant of the eastern house, died of typhoid fever. One day during their sickness, the coverings of the old drain were raised and left open for several hours, with the effect of liberating foul air in such quantity, and so disgusting, as to produce sickness and vomiting among the occupants of the adjacent house. Among families living within two hundred and fifty feet of this faulty sewer, I have knowledge of twelve cases of typhoid fever, which have occurred since it has been overtaken by the changes made in 1869. Since the deaths in the eastern house, above named, our city government have lined the cellar-wall with a tightly cemented brick wall; yet, as the bottom of the drain is one foot below the cellar-floor, and the new brick lining scarcely reaches the bottom of the drain, we can hardly consider the premises safe. I am informed that it is now probable that the city will, before long, complete the new sewer by continuing the pipes through Norman Street. But the dilatoriness with which the proper authorities apply themselves to remove this, and similar dangers to human life, shows that the State Board of Health has yet an important work to do, in multiplying illustrations of casualties from defective sewer arrangements, and in giving line upon line and precept upon precept, until the people shall realize that it is *criminal* negligence to allow conditions productive of disease to remain when they can easily be removed, and until they themselves shall demand that the outlay of money and effort necessary for the public protection shall be *promptly* made. The dangerous nuisance about the shores of North River still remains uninterfered with. The pool back of the jail, bounded by Bridge Street, Northey Street and the Eastern Railroad, about which, and within a stone's throw of each other, as I stated last year, there have occurred twenty-one cases of typhoid fever within the last five years, menaces still the health and lives of those in its neighborhood. In both these cases, I believe the cost of making these infectious districts safe, would eventually be more than recovered to the city, in the increase of taxable property, while not only increased healthfulness, but also greater convenience of travel would be secured, and what are now offensive to sight and smell, might become attractive districts.

[NOTE.—Your correspondent is gratefully indebted to Mr. Charles A. Putnam, civil engineer, for the map of the Creek-street district, and to James Kimball, Esq., for many facts concerning its topographical history.]

(*) The more closely inhabited portion of the city of Salem was, for many years, and even down to the earlier part of the present century, confined to a broad tongue of land having the sea on the easterly end, its harbor lying between the south-easterly side and the shore of the neighboring town of Marblehead. From this harbor, at its southerly side, an inlet of the sea, known as *South River*, pushed for a short distance south-westerly and south-

erly, separating from the main town that portion known as *South Salem*, now (1874) extensively occupied by private dwellings. About one-eighth of a mile from the harbor, the erection of a dam, through the gates of which ascends the in-flowing tide, created a tide-water power, with an extensive reservoir above the dam, called the Mill Pond. The building of the Eastern Railroad, however, across the whole length of this reservoir, or Mill Pond, as locally called, practically destroyed this power, and a gradual filling up of the basin is going on. But, at low tide, a portion of the more shallow parts are exposed, and after a hot and dry day a palpable and most unwholesome miasma arises in the last degree offensive to the neighborhood. On the northerly side of the city, another inlet, locally known as the *North River*, puts in, having the towns of Beverly and North Salem on its northern side. Up this inlet, formerly uninterrupted by any bridge, the tide carried so large a body of water that vessels of some four hundred (400) tons were formerly built on its western banks and floated out to sea through Beverly Harbor. Now (1874) the Essex Bridge, connecting Salem and Beverly, Northfield Bridge, connecting Salem and its sixth or northern ward, the Essex Railroad viaduct and Carltonville Bridge, locally so called, and the dam at Frye's Mills, all impede the passage of the tide-waters. At the viaduct and at Carltonville Bridge, where a few years ago the North River was one hundred and fifty feet wide, it is reduced by these structures to less than thirty feet; and, all along its northerly banks, and at the south-western extremity, a gradual filling-in at the numerous tan-yards has materially lessened the area formerly flooded at high water. But it is above the Frye's mill-dam that the area has been still more lessened. This North River, which, as above intimated, is really but an inlet of the sea, received in former times the waters of Goldthwaite's Brook, a stream which—crossing Peabody Square and there joining Proctor's Brook, which brings down the water from Spring, Brown's and Bartholemew's Ponds and from the marshy grounds in their vicinity in the present town of Peabody (formerly South Danvers)—discharges them into the inlet called the North River. This stream, running easterly, follows the valley between the high grounds of Peabody and those of North Salem, near the Harmony Grove Cemetery. All along its banks, from Peabody Square to Frye's Mill, it has gradually been encroached upon so that in some places its course is materially interrupted; and what was once a free and fast-running stream is, in many places, especially at times when a full reservoir is created by the shutting of the mill-gates at high water, without any downward current. The brook has also been materially narrowed by the accretion of wastage from a bleachery, two glue factories and the tanning and currying establishments on each side of its banks, and by being used as the receptacle of all sorts of drainage and filthy sewage. This has been going on so long that, in some places, the old banks of the stream have been extended into the brook, interrupting its flow and forming areas filled with festering and pestilential matter, which exhales from slimy ditches stenches at times of the most offensive sort. Especially offensive is the effluvium in the night, after a hot and muggy day, and of so diffusive a nature as to be recognized at the distance of half a mile. The attention of the authorities of Salem and Peabody has been often called to the subject and a remedy proposed, but the expense cannot but be very great; and this has caused and now causes inaction in the matter. This remedy, involving the loss of the water-power at Frye's Mills, is the conversion of the stream from Peabody Square, whence "Proctor's Brook" passes toward the reservoir above the mills (together with the res-

ervoir and the area below the mill-dam down to Northfield Bridge) a distance of something like one and a half miles in length, into a drain of some thirty feet wide; and filling up all the rest.* The solid area thus created would be of many acres, and would amount to a large increase of taxable property to both municipalities.

Seekonk.—1,000—23.—Pulmonary and bronchial affections were quite prevalent during the winter months throughout the town. Typhoid fever, with a few exceptions of a mild form, has prevailed over the southern and middle sections. The prevalence of respiratory diseases was due to the varying conditions of the atmosphere and the many sudden changes of temperature. Whooping-cough, complicated with severe bronchitis, existed on the highest and most exposed parts of the town. Typhoid fever has been confined to the fall months and in the vicinity of low, marshy grounds. The season has been unusually dry and the springs very low. In few of the cases only have I been able to find any contamination of the water, offensive cesspools, pig-sties or privies, to which I could attribute the disease. One very remarkable fact for a country town with so few new buildings, is, that most, and these the worst, cases have occurred in newly-built houses. The worst case in town was in a new house, occupied before the walls were even dry, the cellar of which was used for a cook-room, while the cemented floor and walls would easily yield an impression. The house was built on the side of a gravelly hill opening to the south and east, close by a mill-pond that was almost dry during a greater part of the summer and autumn, leaving much decomposing vegetation, exhaling an offensive odor. Quite a number of families live by the side of this pond, but no other case of fever or bowel affection has occurred for some years. In January, scarlet fever broke out in the bone-boiling district of East Providence, which was formerly designated "Seekonk Plains," being limited, with few exceptions, to a radius of one-fourth to one-half a mile. From one or two families, it gradually increased till it attacked the whole community, scarcely escaping a single house, sparing neither age nor condition, and assuming almost a malignant type. Hemorrhage and albuminaria were the characteristic features of the epidemic, though many died of the throat affection, and others from the effect of the poison upon the nervous system. During this epidemic, a family living in Seekonk removed half a mile from the nearest case of the disease, and the five children were all attacked with scarlet fever. One of them died within twenty-four hours, two others in a week, and the fourth soon after, while the fifth, a girl of sixteen or eighteen years, who narrowly escaped death from diphtheria a few years previously, was confined to her bed several days with sore throat, and soon after had an attack of severe erysipelas of the face and head, but recovered.

Shelburne.—1,700—15.88.—Diphtheria has been prevalent in a mild form, also whooping-cough.

Somerville.—20,000—24.2.—Scarlet fever and cholera infantum have been more than usually prevalent, and were almost entirely confined to the foreign population, who generally choose the low, damp localities, where considerate individuals would not be willing to locate. I think such diseases are not so particular about localities as about the sanitary regulations

* Would an open drain, however wide, be a permanent or efficient remedy?—[Ed.]

of households. More bad smells might be boxed up from dirty dwellings in Somerville than from Miller's River. It is because the nuisance is not unroofed that the air is not laden with bad odors. Miller's River, as a nuisance, is so far obliterated as to be reckoned among the things that were.

[Another physician writes from Somerville, as follows:—]

(*) We have experienced little difficulty from Miller's River this summer, and I think none from the portion which is filled in. We have some odor at low tide from the flats just beyond the Lowell Railroad, but are very little troubled, and *none in comparison with last year*. We have a smell sometimes, which we think is the smell of "rendering," and which *seems* to come from the vicinity complained of. If we had never been troubled more than now, however, we should have hardly thought it necessary to complain. If we *could have it*, we would like it *less* than at present.

[A professional chemist gives the following extract from his note-book in regard to the only night during the past year when he had any trouble:—]

"SUNDAY, August 30, 1874.

(*) "Woke up about 2.45 this morning; there was a most horrible stench in the house; went down to the front door; found it came from the outside. It was an unmistakable rendering smell, such as is produced when sour meat is tried out. It was coming in freely at our room window. I did not think it quite so strong down stairs as up. The wind was easterly in the evening and was the same direction in the morning."

South Dennis.—I have had eighteen cases of typhoid fever in a village of about twenty families in this town. These occurred in the vicinity of a partially drained cranberry swamp, which will be completely drained before another season.

Sterling.—1,670—10.79.—This has been a year of unusually good health in this town. In one locality, acute bronchitis was epidemic, visiting almost every house, and in a greater or less degree (with a few exceptions) affecting every member of the family.

Stonham.—5,000—15.4.—There has lately been a larger number of mild cases of diphtheria than usual.

Topsheld.—1,213—19.78.—Measles in a severe form prevailed during the first half of the year. There were about 140 cases, many of which were attended with severe pulmonary complications. Pneumonia has been prevalent here for eight or ten years, more so than it was fifteen years ago.

Upton.—2,000—16.5.—Scarlet fever in a severe form, mild pneumonia, and enteric diseases have predominated. The histories of the cases point to over-work, and inattention to physical needs, and the daily changes of temperature.

* Our correspondent states that the nearest rendering establishment known to him is about one and a quarter miles south of east from his house; that he found it in a worse condition on December 29 than he had ever seen it before; and that four other such establishments are about as near, and in the same general direction, while the others are rather farther off.

Uxbridge.—3,100—13.29.—Inflammatory diseases of the lungs have been more than usually prevalent during the first half of the year, attributed to the coldness and frequent changes in temperature during that period.

Wakefield.—6,000—20.5.—Typhoid fever and diphtheria have prevailed. For the enteric fever, I have no doubt that a principal cause is to be found in the universal proximity in this town of wells and privies, sink-drains, etc., and the entire lack of sewerage that exists. Good systems of water-supply and drainage are imperatively demanded.

The diphtheria has been most prevalent in a certain locality on high land, but in crowded Irish tenements. There have been, in a very small space on the hillside spoken of, some seven or eight deaths, with quite a large number of non-fatal cases. Elsewhere in the town the cases are rare.

Waltham.—10,000—15.2.—The health of this town has been remarkably good.

Warwick.—800—15.—Typhoid fever has been most prevalent of all diseases, but less so than usual.

Of a family consisting of four individuals who lived on the banks of a mill-pond, which dried up last August, exhaling a disagreeable odor, three were attacked with typhoid fever. A daughter, living sixty miles distant, made a short visit to her parental home, contracted the fever, returned home, and died. Typhoid fever is the greatest scourge to which farmers are subject. Many of them are very negligent about their privies, barn-yards and kitchen slops. In too many instances, the well-water becomes contaminated by its proximity to the privies and water from the sinks, giving it an unpleasant odor that those constantly using it do not perceive.

Wayland.—Scarlet fever prevailed in March, April and May, in all forms, from mild to malignant. It seemed to be increased from the fog from the river.

Generally, the health of the town this year has been unusually good.

Webster.—5,300—17.17.—With the exception of a mild type of whooping-cough and typhoid fever, this town has been unusually free from disease for more than a year.

Westford.—1,800—15.—Tonsillitis was unusually prevalent in the early part of the year.

West Springfield.—2,900—25.17.—In the first part of the autumn months, diphtheria was quite prevalent; just now, typhoid fever is gaining an unusual number of victims. I could not discover any cause for the former disease; but with regard to the fever, just before the first cases we had unusual fogs, beginning very early in the evening and lasting till noon, sometimes even the whole day. They were the more remarkable from the ground's being unusually dry. The town has grown rapidly, and the privies and wells are close together; but a sewer is now building, which will, I hope, abate one great cause of disease.

Weymouth.—11,500—12.57.—Typhoid fever has been unusually mild.

Winchendon.—3,500—20.57.—During the first six months of the year, there

was an unusual prevalence of rainy and damp weather. For month after month of the winter, rain and snow succeeded each other at very short intervals. About the 10th of February, a severe form of "sore throat" began to prevail, chiefly among adults, and characterized by high pulse (120) and temperature (105°), and by general febrile symptoms. The attack was extremely abrupt. There were pain in throat and difficulty in swallowing, with swelling of the glands of the neck. The throat presented a dark, angry redness, the tonsils swollen, with little patches of altered secretion, the uvula glued to one side, etc. One of us had 85 well marked cases. A few cases were followed by mild fever of two or three weeks' duration. A large number had abdominal pain of a severe nature for a week after. Seventeen cases of rheumatic fever occurred. Typhoid fever was very much less common than during the past few years, notwithstanding the dryness of the autumnal months and the marked offensiveness of the marshes and river-bed.

Winchester.—3,500—12.—In the latter part of September and in October, a mild form of influenza was very common, which has continued into November; has often been accompanied with inflammation of fauces and larynx; sometimes with severe *diphtheria*, from which two children died in November. I never knew so little or so mild "summer disease" in all its forms as during the past year.

Windsor.—No disease has prevailed to any unusual extent.

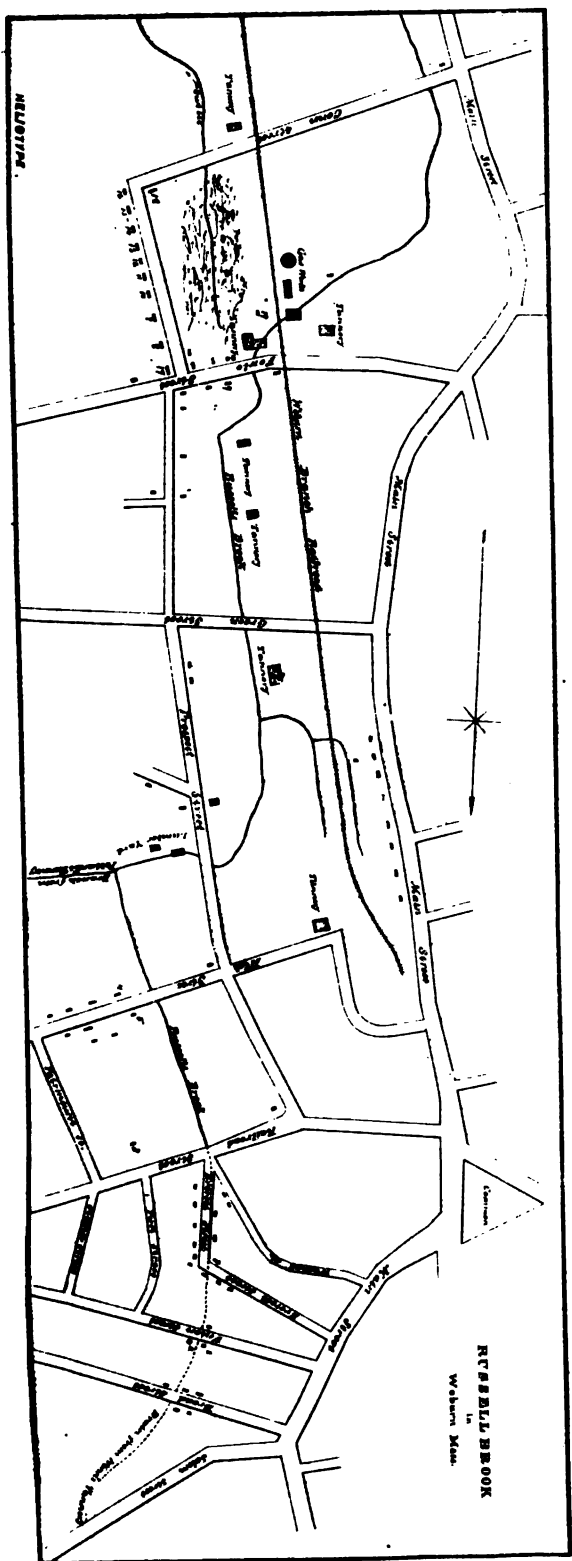
Woburn.—9,600—16.04.—This town has about ten thousand inhabitants, whose principal occupation is the tanning and currying of leather. It lies about ten miles from the sea, and the centre of the town is about one hundred feet above the sea level. It is one of the important parts of the watershed of the Mystic River. Many of the streams that feed this river arise in Woburn. Several tanneries pollute these streams, being situated on or near the banks, with their refuse products and sewage flowing into them. Of these products, the spent "bark-liquor," containing gallate of iron, is injurious to vegetation, and renders the stream useless for domestic purposes; but it cannot be regarded as positively contaminating the atmosphere. The compounds of "water-washings," lime, hen-manure and "fleshings," constitute the most offensive ingredients of the polluted stream, particularly when it is small, shallow and tortuous. It is said, and probably truly, that tanneries in *themselves* are not prejudicial to the health of the people living near them. Those on Russell Brook, eight in number, are large; they have been used many years, and they discharge their sewage, with one exception, into a single small stream, which receives also the refuse from two currying establishments, one gas-house and numerous dwellings. The section of the brook into which all this filth is poured is about one mile long, three feet wide, and usually about six inches deep. The upper part, for about one-quarter of this distance, has been converted into an ordinary brick sewer, with several traps to permit the entrance of the surface-drainage. The remainder is still an open, polluted stream. Where this is covered, the sole complaint is on account of a disagreeable smell coming through the "traps." This stench, arising from the refuse of the tanneries, is often complained of as an intolerable nuisance; but it is doubtful whether disease has been caused by it. Formerly, the nuisance was so intolerable at this place, that the proprietors of the adjacent tannery built the present

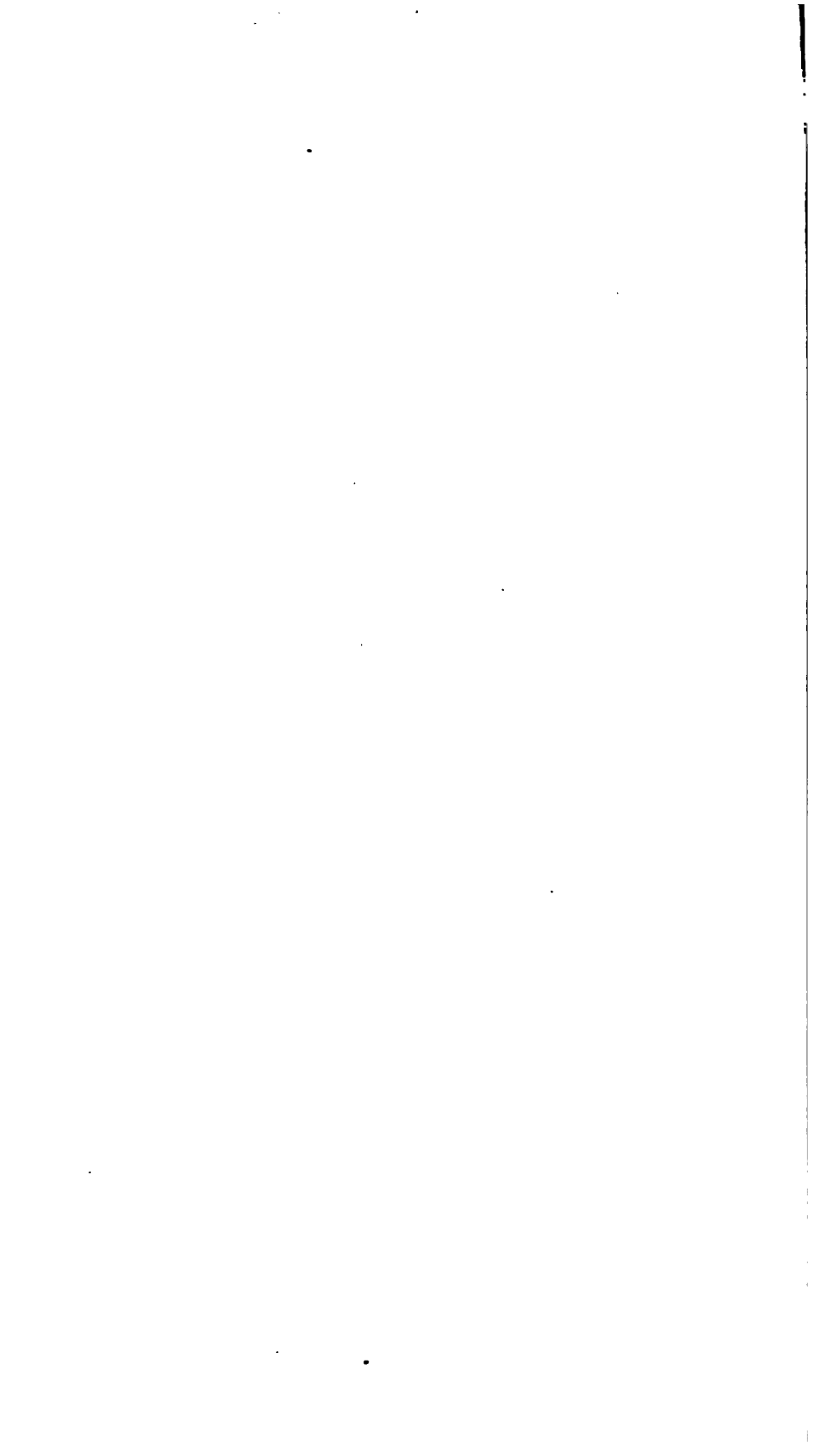
"barrel-drain" at their own expense; and the well-water in the vicinity, which had been previously too much contaminated for use, became pure again.

In November, 1874, the following facts were ascertained of the different localities in the course of the stream. *Broad Street*: Smell but seldom noticed. [See map.] *Union Street*: There are "traps" near the street, and the odor has been complained of; sometimes causing a feeling of prostration. A death from typhoid fever occurred here a few years ago. In the house marked "1," a family has lived for eight years, and has been annoyed by the odor more or less during the whole of that time. Before the sewer was built, paint was turned black in their house, and their well-water was rendered unfit for use. Within a few years, there have been in this house one death from diphtheria and two cases of typhoid fever, one of which proved fatal. The general health of the family is far from vigorous. In the house marked "2," the stench has been such an annoyance that persons sleeping on the side of the house nearest to it have been obliged to keep their windows closed in summer. Recently, the head of the family, a professional man in the prime of life, died in this house, of typhoid pneumonia. From this evidence, it will be seen that the traps of the sewers have not been effectual in preventing the escape of foul emanations. *Everett Street*: The stream runs below the sidewalk on the westerly side of the street, and there are several traps. The population is dense and shifting, many of the residents seldom remaining over a year. In one case, a family left the neighborhood solely on account of the stench, which is especially bad near a trap close to the entrance of a house-drain. The well-water along the lower end of this street has so disagreeable a taste that the residents generally will not drink it. The illness of one person in this neighborhood is attributed entirely to this odor, which comes forth from the "traps" concentrated and extremely offensive. *Railroad Street* crosses the sewer, and is elevated above the level of the meadow land by almost eight feet. At this point, the sewer becomes an open brook, sluggish, shallow and in the highest degree offensive. One person, living near by, says that his cattle will not eat the grass growing on its banks. He mentions several deaths which have been attributed to the foul condition of the air. At the house marked "3" there is some odor. *High Street* is crossed by the open channel of this offensive brook; and, from the eight or nine houses in the vicinity, there is universal complaint of a "disgusting and sickening nuisance." Several of the wells have been contaminated. In each of the houses marked "4" and "5" a case of typhoid fever has lately occurred. The vegetation found generally in brooks is entirely wanting here, so that a great means of purification of the filthy water is lost. *Prospect Street*: The smell is very offensive here, and paint has been turned black. People have undoubtedly been deterred from locating in Woburn from this cause. Below Prospect Street, the stream becomes larger, and the smell resembles that noticed about tanneries, the water being quite black.

Taking a general view of the whole stream, it may be said that the offence is greatest in the middle portion, where many house-drains, privies, etc., empty into it.

Within the last ten years, there has been a large number of deaths in this district, especially from consumption, typhoid fever, diphtheria and scarlet fever. During the past summer and fall, when the brook was in its worst condition, there was sickness in most of the houses. It is fair to infer that the prevalence of disease was influenced, if not caused, by the polluted stream,





because the residents in this district live in good houses, and are intelligent, careful and well provided.

Another source of disease is a small pond near Conn Street, into which has flowed the drainage of two tanneries. The outlet of this pond has become obstructed by tan-bark, etc., so that a mire of considerable size has been formed. In the house marked "6," there were two cases of typhoid fever this season; in "7," there was one; and, on Conn Street, there were twelve cases at one time. In "8," there has been no sickness, but some complaint of the bad smell.

The water used for drinking is from Horn Pond. In "9," well-water is used, and three cases of typhoid fever occurred, of which one was fatal. In "10," well-water used,—two cases of typhoid fever. In the block "11," there were, in November, four cases of typhoid in two tenements, the others remaining vacant because of the sickness in that locality. In block "12," there was one case of typhoid fever this season. In houses "13," "14," "15" and "16," there has been much complaint of bad smells, but no special sickness. In block "18," three persons were sick with diphtheria at the time of this inquiry. The general health of tenants in this block is poor, and the well-water used by them is turbid and discolored. On Fowle Street, the residents complain grievously of the smell arising from the nuisance in their rear. The house on Fowle Street, where there were two cases of typhoid fever, was so filled with the sickening odor, that the writer of this communication was sickened, and with difficulty kept from vomiting. Year after year, petitions have been sent to the local board of health, and they have done all that they could do without rendering the town liable to a lawsuit. As before stated, the covering of the brook from Salem street to Railroad Street was adopted as the best mode of relief. Below the latter street, it has been the practice, when the brook was dry, and the stench unusually offensive, to dig out its bed, and throw the semi-solid mire on either side, allowing it to dry there; a proceeding the immediate result of which was to make matters worse. It is desirable that there should be a *general sewer law*, as we have a general railroad law. The introduction of water, by reservoirs, etc., into so many towns and cities has become so general throughout the State, that unless proper sewers are supplied, the public health must suffer, and many able-bodied citizens will be lost to the community by typhoid fever and similar diseases.

[Our correspondent calls attention to the prevalence of decayed teeth, which he considers as peculiar to civilized life, and which he ascribes to the withdrawal of the mineral salts from the food largely eaten in modern society. Statistics are quoted from "How Plants Grow," showing that the mineral ash from whole wheat is about four times as great as that from fine wheaten flour. The following two cases are given as illustrations of this theory:] "1. A native of Prince Edward Island, possessing a perfectly sound set of teeth, came to Massachusetts seven years ago. At the present time, she has lost about half her teeth; and, while she has been in this State, she has subsisted mainly on flour bread, which she did not eat before. 2. A dentist had filled fourteen cavities in the teeth of his first-born child at the age of four years. His family then gave up the use of fine flour, eating meat, the whole grains, etc., and another child, born somewhat later, had perfectly sound teeth when four years old."

[Our correspondent sends the following table, showing the prevalence

of decayed teeth among the pupils in the schools of Woburn. He shows that the evil is not confined to one town. Probably statistics taken throughout the State would give similar results; and American dentists in France and Germany say the same of those countries.]

NAME OF TOWN.	Age of Scholars examined.	No. of Scholars examined.	No. having sound Teeth.	No. having decayed Teeth.
Woburn,	5 to 8 years, .	42	6	36
"	" " .	43	3	40
"	" " .	28	4	24
"	" " .	26	12	14
"	" " .	45	11	34
"	" " .	94	27	67
"	" " .	39	9	30
"	" " .	50	15	35
"	" " .	24	5	19
"	" " .	23	10	13
"	8 to 12 years,	33	11	22
		447	113	335
Lexington,	5 to 8 years, .	30	7	23
"	" " .	50	13	37
"	8 to 12 years,	30	3	27
"	" " .	50	2	48
		160	25	135
Concord,	5 to 8 years, .	30	3	27
"	" " .	39	11	28
"	" " .	18	4	14
"	8 to 12 years,	38	4	34
		125	22	103
Bedford,	5 to 8 years,	35	2	33
"	10 to 20 " .	40	11	29
		75	13	62

[Our correspondent states that the teeth of foreigners (in Woburn) are in a much better condition than those of native Americans.]

Worcester.—50,000—20.46.—During the summer months, there was a large number of cases of diarrhoea and cholera infantum in certain parts of the city, due to the filthiness of the sections. In certain parts of the city, the stench was outrageous, owing to drains opening into the streets.

*Death-rates in some American Cities during the Year 1874.**

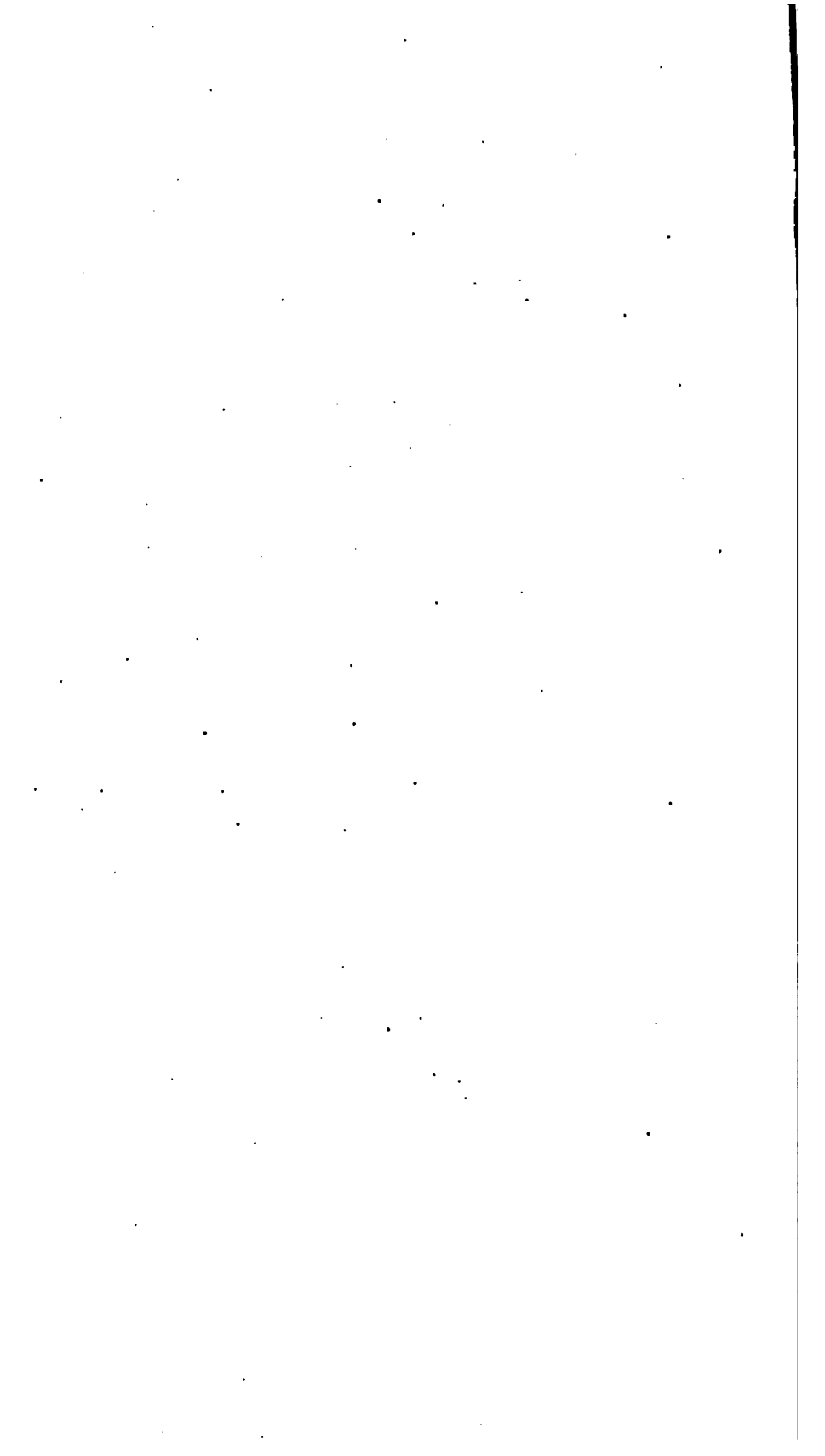
CITY.	Estimated Population.	Deaths per 1,000.	CITY.	Estimated Population.	Deaths per 1,000.
New York, . . .	1,040,000	27.61	Memphis, . . .	50,000	22.96
Philadelphia, . . .	775,000	19.54	Lowell, . . .	49,000	24.12
Brooklyn, . . .	450,000	24.46	Cambridge, . . .	48,000	24.56
St. Louis, . . .	400,000	16.27	Hartford, . . .	45,000	12.86
Chicago, . . .	395,000	20.31	Fall River, . . .	44,000	26.75
Baltimore,† . . .	350,000	21.14	Reading, . . .	42,000	18.66
Boston,‡ . . .	331,000	23.60	St. Paul, . . .	40,000	16.03
Buffalo, . . .	175,000	18.46	Paterson, . . .	38,000	23.35
Cleveland, . . .	145,000	16.69	Portland, . . .	35,000	19.08
Dist. of Columbia, . .	150,000	19.72	Lawrence, . . .	33,000	23.45
“ “ whites, . . .	110,000	15.71	Springfield, . . .	33,000	18.33
“ “ col'ed, . . .	40,000	30.77	Utica, . . .	32,000	16.42
Pittsburg, . . .	137,000	24.69	Lynn, . . .	31,000	20.45
Newark, . . .	115,000	29.16	Quincy, Ill., . . .	30,000	18.76
Detroit, . . .	110,000	21.69	Springfield, Ill., . .	30,000	12.23
Milwaukee, . . .	100,000	19.09	Fort Wayne, . . .	30,000	17.30
Providence, . . .	100,000	19.86	Savannah, . . .	29,000	35.38
Albany, . . .	95,000	15.30	Terre Haute, . . .	25,000	12.20
Allegheny, . . .	75,000	19.77	Norfolk, . . .	24,000	18.08
Richmond, . . .	65,000	24.47	Dubuque, . . .	22,000	12.32
Syracuse,§ . . .	60,000	15.20	Augusta, . . .	20,000	28.65
New Haven, . . .	58,000	19.50	Bangor, . . .	20,000	15.65
Toledo, . . .	55,000	10.90	Omaha, . . .	20,000	11.00
Troy, . . .	50,000	29.00	Norwich, . . .	18,000	21.35
Charleston, . . .	50,000	38.96	Concord, N. H., . .	14,000	13.15
Worcester, . . .	50,000	20.46	Newport, . . .	13,000	12.30

* As given by the registrars in answer to enquiries sent to one hundred cities. The very low mortality of some of the cities suggests the idea that the registration may not have been complete.

† From October 31, 1873, to October 31, 1874.

‡ Including all annexations.

§ Exclusive of 75 drowned in the flood of July 26.



REPORT ON THE SANITARY CONDITION

OF THE

STATE PRISON AT CHARLESTOWN.



REPORT ON THE SANITARY CONDITION OF THE STATE PRISON AT CHARLESTOWN.*

Hon. J. C. ROBINSON, *Secretary Board of Prisons Committee.*

DEAR SIR:—In compliance with a request made to the Chairman of the State Board of Health, we, as a Committee to whom the matter was referred, desire to make the following statement in regard to the State Prison and the land connected with it, considered from a sanitary point of view:—

In the location of the prison, we agree with its founders, officers and inspectors in the opinion, as generally expressed, that there is nothing in that of itself absolutely prejudicial to health, although, for many reasons, the place is not desirable; the present yard of five acres is smaller than the demands of health would require, and thorough ventilation and drainage are difficult of attainment, if at all possible, on such low land.

The fact, too, that the floors of the various wings are even with the surface of the soil,—which is only two feet above the level of the water at high tide, and quite near it,—must, as stated by the inspectors in their report for the year 1852, cause dampness in some of the lower cells, which is "hazardous to health." This evil is, however, to a great degree obviated, from the fact that the floors of the cells rest upon stone foundations several feet deep, and not directly upon the ground.

External to the prison, and not far distant, is an evident source of danger to health in the flats upon which the sewage of Charlestown and of the prison are spread and exposed to the air; so that, for several years, it has not infrequently been necessary to close windows, in order to avoid the intol-

* The previous papers were sent to the Senate in manuscript, January 20, 1875; and this report was made while the others were going through the press.

erable stench, and that, too, in summer, when the necessity for ventilation by open windows is the greatest.

In regard to the health of the prison itself, an examination of the annual reports for the past fifty-five years discloses the following facts:—

From 1805—the date of completion of the original prison—to 1828, inclusive, there were 2,176 prisoners committed, and 114 deaths, or 47.8 to each 1,000 *commitments*. This death-rate was then thought to be great, and to call for a remedy. The convicts slept in dormitories containing from six to sixteen individuals each, with close doors, and with little chinks in the walls to admit air and sunshine.

In 1829, the new prison (the present north wing) was completed, with small windows. It contained 304 cells, with close doors, each containing a space of 171½ cubic feet; and from that date to the end of 1865, when crowding began to be marked, the mortality was only 34 to each 1,000; while from 1866 to 1874, inclusive, the death-rate has been a trifle under 50 to each 1,000 commitments.

A glance at the following table shows these facts:—

TABLE No. I.

YEARS.	No. of Convicts in the Prison at the end of each year.	No. of Deaths per 1,000 for each year.	Total No. of Pardons for each year.	YEARS.	No. of Convicts in the Prison at the end of each year.	No. of Deaths per 1,000 for each year.	Total No. of Pardons for each year.
1820,	308	19.4	25	1838,	302	23.3	21
1821,	282	17.7	32	1839,	318	15.7	7
1822,	279	35.8	14	1840,	322	6.1	14
1823,	308	19.4	6	1841,	331	24.1	26
1824,	298	20.1	10	1842,	287	6.9	6
1825,	314	3.2	13	1843,	265	7.5	13
1826,	313	19.2	14	1844,	276	7.2	15
1827,	285	3.5	27	1845,	280	3.6	8
1828,	290	13.8	14	1846,	253	3.9	7
1829,	323	18.5	7	1847,	288	—	7
1830,	290	17.2	7	1848,	281	10.6	27
1831,	290	24.1	12	1849,	349	8.6	15
1832,	256	42.9	10	1850,	440	13.6	10
1833,	250	24.	7	1851,	472	11.8	13
1834,	277	14.4	17	1852,	483	8.3	20
1835,	279	10.8	13	1853,	491	8.1	22
1836,	278	14.4	7	1854,	483	16.6	26
1837,	291	17.2	14	1855,	457	6.6	26

TABLE No. I—*Concluded.*

YEARS.	No. of Convicts in the Prison at the end of each year.	No. of Deaths per 1,000 for each year.	Total No. of Pardons for each year.	YEARS.	No. of Convicts in the Prison at the end of each year.	No. of Deaths per 1,000 for each year.	Total No. of Pardons for each year.
1856, .	452	8.8	27	1866, .	518	17.4	16
1857, .	440	9.1	29	1867, .	647	10.8	13
1858, .	483	4.1	26	1868, .	558	10.7	34
1859, .	491	16.3	8	1869, .	593	11.8	30
1860, .	502	7.9	11	1870, .	563	24.8	63
1861, .	547	18.3	30	1871, .	543	14.7	36
1862, .	460	21.7	54	1872, .	562	33.8	16
1863, .	408	17.1	28	1873, .	586	15.3	10
1864, .	351	14.2	30	1874, .	683	20.5	20
1865, .	379	13.2	25				

In the days of the old prison (since remodelled in 1852, enlarged in 1867, and constituting the present west wing), the mortality was considerable, being 17 to each 1,000 *residents* per year for the ten years ending in 1829. This high rate has already been explained.

In 1830, after the occupation of the "new prison," when one would have expected the death-rate to fall, it remained stationary; and in 1831 it rose considerably,—facts difficult to explain, unless it came from living in a newly-finished, incompletely dried, and consequently damp, stone building.

During the year of the cholera epidemic (1832), there were in the prison 195 cases presenting more or less the symptoms of that disease, although none died directly from it; but the general death-rate was excessive (42.9), as was to be expected.

In 1833, when the mortality was great, Dr. Walker stated in his report, that "low fever, of a typhoid character, was prevalent."

In 1834, the mortality of the previous three years had caused some alarm, and great efforts were made to improve the sanitary condition of the prison. These efforts bore fruit in the lower death-rates of the three succeeding years,—a fact which was noticed in the report of the physician in 1836. The weak convicts in the prison, too, had probably many of them died during the epidemics of 1832 and 1833.

In 1837, "low fever" was prevalent again, and the death-rate rose.

In 1838 occurred the first death by violence of which we find note; and, excluding this, the death-rate would be 19.5. In this year, too, was the first mention of a death from pneumonia.

In 1841, the death-rate was high, but fully compensated for by the extremely low rates of the previous and succeeding years.

From 1842 to 1849, inclusive, during which time the average number of convicts was small (285), a period of unusual health prevailed, and the average yearly death-rate per 1,000 was only six.

During 1850 and 1851, the average number of convicts in the prison had increased, respectively, 60 and nearly 70 per cent. above the average of the previous eight years; there were complaints of crowding (although the cells were not all occupied), diarrhoea prevailed, and the mortality increased.

On the completion of the new south wing, in 1852, with 150 cells, of 309½ cubic feet each, and with the remodelling of the west wing for 100 cells a little larger than those in the south wing, together with the introduction of Cochituate water, the mortality decreased, and did not, until 1861, reach the figure of even 10 to the 1,000, except in 1854, when there were three cases of small-pox and 205 cases of severe choleraic diarrhoea treated, and in 1859, when the higher rate was more than compensated for by very low rates in 1858 and 1860.

In 1860 and 1861, just about the beginning of the war, the prison was crowded, and the high death-rates of 1861, 1862 and 1863 can probably be accounted for in that way; the low death-rate in 1860, in spite of the large number of convicts, following directly upon the placing of large windows in the north wing, admitting air and sunshine, which had been pretty well kept out by the old, small windows.

In 1862, 1863, 1864 and 1865, during the war, there were fewer commitments, and the number of convicts in the prison diminished materially, as did the death-rate.

At the close of the war, in 1866, the number again increased, with an increase in the death-rate.

In 1867, by enlarging the west wing, 98 more cells were added to the 554 already existing. Grated doors, admitting more air, were placed in the cells of the north wing in 1868, and the death-rate became lower for three years.

Since that time, the mortality has been excessive, while the prison has been about three-quarters full, or full.

From the figures in the fourth column, it will be seen that the variation in the number of pardons from year to year would not in any probability have seriously affected the results arrived at.

It has been estimated, however, by careful computations, that the *true* death-rate is *at least* twenty-five per cent. higher than the figures we have given, many men having been pardoned in the last months of their lives.

From a consideration of the second table (dividing the period into six of nine years each, and beginning after the cholera and typhoid fever years), the following facts will be apparent:—

TABLE NO. II.

YEARS.	Average number of convicts in prison, yearly.	Total number of deaths in nine years.	Death-rate per 1,000 per year.	Number of pardons per each 1,000 per year.	Average number of days' sickness for each convict per year.	Percentage of deaths from consumption.	Annual death-rate per 1,000, excluding consumption.
1821 to 1829, .	292	45	17.0	52.0	—	—	—
1830 to 1838, .	278	52	20.6	47.1	11.9	55.0*	9.4*
1839 to 1847, .	291	23	8.7	43.1	7.6*	43.5	4.8
1848 to 1856, .	434	41	10.5	47.6	4.9	48.3	5.0
1857 to 1865, .	451	54	13.3	59.0	3.7	47.6	6.6
1866 to 1874, .	584	93	17.8	45.0	4.6	62.3	6.7

* Computed for eight years, the data being wanting for the ninth.

1. The total death-rate has progressively increased (since 1839), and finally doubled.

2. The relative mortality from consumption has also increased, and from 43.5 per cent. to 62.3 per cent. of the total number of deaths.

3. The death-rate from all causes, excluding consumption, has also progressively increased, and from 4.8 in each 1,000 to 6.7, an increase of 40 per cent.

4. The number of pardons has not been subject to sufficient variation from year to year to vitiate the above results.

5. The number of days' illness to each man during the year has decreased, and is certainly very small. As this column represents, to a great degree, transient illnesses, the fact can be probably explained by the greater attention to sanitary laws and to preventive medicine from year to year.

Finally. This progressive increase in the death-rate has taken place in spite of many and great improvements in the prison.

Previous to 1831, the causes of death were not uniformly stated. In 1832, 1833, 1839, 1849 and 1852, there were deaths from typhoid fever. In 1834 and 1835, there were deaths from "fever"; and in 1837, a "low fever" prevailed.

After the introduction of Cochituate water and the other improvements already mentioned, in 1852, there was not a case of fever until 1866, when the prison was crowded, and one death occurred. There were deaths from the same disease also in 1868 and 1874, and one from "fever" in 1870.

In 1869, 1870 and 1871, acute pulmonary diseases became prevalent for the first time.

Of 19 deaths in 1872, 12 were from consumption; of 9 in 1873, 8 were from the same cause; and in 1874, with 683 convicts for 654 cells, there died of pneumonia, 1; typhoid fever, 1; typhoid pneumonia, 2; consumption, 8; and the death-rate for the year was 20.5.

From 1805 to 1874, inclusive, there have been 383 deaths. From 1831 to the end of 1874, there have been 258 deaths; of which 131 were from consumption, 8 from typhoid fever, 4 from "fever," and 5 from pneumonia. Four of the deaths from fever occurred after the early part of 1866, and all of the cases of pneumonia, with one exception (in 1838), occurred after that year.

The deduction which we draw from these facts is, that the prison, as now constructed, cannot be occupied to more than about three-fourths of its full capacity without an alarming increase in its mortality.

The mortality from all other causes, *excluding consumption*, since 1839, has not at any time been great, the average yearly chances of death in the 9 years ending in 1874 having been 67 in 10,000 (or, adding twenty-five per cent. for pardons, 84 in 10,000), while for all males from 20 to 70 years old in the State, the chances are about 80 in 10,000.

The death-rate in Massachusetts for all males over twenty and under seventy years of age varies a little on either side of 12.5 in 1,000; and in the prison, from 1866 to 1874, it was 17.8 (or, adding one-fourth, 22.25); in 1874, it was 20.5 (or 25.6); and from 1870 to 1874, inclusive, it was 21.8 (or 27.25).

In order to compare the mortality with other prisons, the following table has been prepared, including, as far as possible, those of the same class as the prison in Charlestown:—

TABLE No. III.

PRISONS.	No. of Years.	Annual Death-rate per 1,000 prisoners.
Austria (long sentences), prisons for males,	2	71.0
Italy, prisons in general,	1	50.9
France, prisons for men,	—	36.5
Austria (short sentences), prisons for men,	2	33.0
Connecticut (U. S.) State prison,	18	24.8
New York (U. S.), Auburn,	18	17.8
Belgium, prisons in general,	1	17.7
Denmark, prisons in general,	2	17.5
Massachusetts (U. S.) State prison,	18	17.2
England, all convict prisons for men,	15	13.8
Norway,	—	9.7
Switzerland,	—	6 to 16
Germany, prisons for men,	—	10 to 27

TABLE NO. III.—Concluded.

PRISONS.	ANNUAL DEATH-RATE PER 1,000 PRISONERS.	
	1868.*	1872.*
Ohio, State prison,	22.8	40.0
Maryland, State prison,	30.5	30.0
Maine, State prison,	36.3	15.0
Kentucky, State prison,	11.0	35.0
Indiana, Southern prison,	30.0	10.0
Michigan, State prison,	18.1	10.0
Massachusetts, State prison,	10.7	15.3
Pennsylvania, Western prison,	6.8	15.0
Iowa, State prison,	10.0	10.7
New York, Sing Sing,	10.8	10.0
New York, Auburn,	10.5	10.0
Wisconsin, State prison,	5.1	10.0
Indiana, Northern prison,	6.8	5.0

* These two years were taken as the statistics happened to be of easy access, and time was wanting for further comparisons.

It will be seen that the mortality in most prisons on the continent of Europe is much greater than in Charlestown. With the exception of those in Belgium and Switzerland and individual prisons in Germany, however, their sanitary condition is bad. Scurvy is mentioned as a common disease in many of them; and, in Austrian prisons, this most thoroughly preventable disease causes 9.2 per cent. of all the deaths.

The death-rate in our prison, up to 1870 and after 1839, compares favorably, too, with the rates in the majority of American prisons; but, if we take a high standard of comparison,—the prisons of Great Britain,—we shall see that for the past five years our death-rate has been excessive. Major E. F. Du Cane, R.E., Surveyor-General of Prisons in Great Britain, says of them, in a report published in 1872: "The history of the prisons for many years has shown an entire absence of epidemics within them. . . . In the construction of the prisons, most careful attention is paid to the important questions of drainage and ventilation"; and it

will be seen from the table that their death-rate is quite moderate.

In investigating the causes of the great mortality of late in this prison, it is clear that we have only three points to elucidate:—

1. Why there should be so many deaths from consumption.
2. What should make the mortality of certain, and especially the last five, years as great.
3. Why typhoid fever and pneumonia have recently appeared and caused several deaths, after having been unknown in the prison for so many years.

The three results are considered to be due to a common cause, and the three questions will be answered together.

Probably a large number of the convicts, possibly a quarter or a third of those who die in the prison, were suffering from incurable disease when sentenced. It is unfortunate that no statistics are to be found on this point; but a consideration of the following table will show that at least a majority must contract the diseases of which they die in the prison:—

TABLE NO. IV.

Showing Death-rates, etc., according to the Length of Sentences, from 1828 to 1864, inclusive.

LENGTH OF SENTENCE IN YEARS.	No. of Men sentenced.	No. of Men pardoned.	No. Pardoned per 1,000.	No. of Men who died.	Death-rate per 1,000.	Death-rate per 1,000, excluding those pardoned.
Less than 2, . . .	1,160	20	17.2	14	12.0	12.2
2 to 3, . . .	1,214	84	69.3	25	20.2	22.1
3 to 5, . . .	1,318	160	121.4	35	26.4	30.1
5 to 10, . . .	849	212	249.2	38	44.7	59.6
10 and over, . . .	238	76	316.4	28	118.1	173.8
For life, . . .	183	95	519.1	28	153.0	315.9

It has been stated, and probably with truth, that convicts in Massachusetts are more broken down by excesses of all kinds now than they were fifty years ago, when our cities were small; and this fact would account in some degree for higher death-rates. In proof of the assertion, we may state that twenty-two prisoners were sent to insane asylums during the

last eleven years, but less than thirty for the whole period before that time. In 1838 a case of insanity was spoken of as the second in ten years. Syphilis, on the other hand, is not so much more common as one would expect.

The substitution of solitary confinement as a punishment for flogging, in 1856, and giving up the out-of-door work in stone-cutting, in 1864, have been considered causes of increased mortality; but a glance at the first table shows conclusively that this could not have been the case. Undoubtedly, the present sedentary, indoor employment of many of the prisoners, especially where they are exposed to breathing dust, is injurious to health; but, even with an increased mortality, that is not so great an evil as idleness, and, under a contract-system of labor, must be considered as somewhat unavoidable, —to what degree it is not easy to say.

Confinement, routine, despondency, despair, the dyspepsia from eating in solitude,—all act with cumulative effect, as will be seen by the last table, but no more than they did twenty-five years ago.

The general care of the prisoners, including clothing, etc., etc., seems excellent, with the exception that they do not have enough active employment.

The food seemed to us good in quality, well cooked, abundant, and the diet more liberal than any others with which we have been able to compare it. In connection with the great prevalence of pulmonary consumption may be mentioned the small quantity of the fatty elements of food in the dietary; but this is a criticism which applies to all prisons, and consumption is the chief cause of death in nearly all of them. It may be interesting to compare the diet-list with that for convicts at industrial employment in prisons in Great Britain. In the latter, each prisoner has a prescribed quantity of food; at Charlestown, he has all that he wishes.

DIET AT THE MASSACHUSETTS STATE PRISON.

<i>Breakfast,</i>	Sunday, . . .	Rice and molasses, white bread, coffee.
	Monday, . . .	Fish-hash, white bread, coffee.
	Tuesday, . . .	Meat-hash, white bread, coffee.
	Wednesday, . . .	Potatoes, salt pork, white bread, coffee.
	Thursday, . . .	Meat-hash, white bread, coffee.
	Friday, . . .	Fish-hash, white bread, coffee.
	Saturday, . . .	Meat-hash, white bread, coffee.

<i>Dinner</i> , . . .	Sunday, . . .	Meat-hash, graham bread, coffee.
	Monday, . . .	Corned beef, vegetables, white bread.
	Tuesday, . . .	Baked beans, brown bread.
	Wednesday, . . .	Beef soup, white bread.
	Thursday, . . .	Pea soup, white bread.
	Friday, . . .	Baked beans, brown bread.
	Saturday, . . .	Pea soup, white bread.
<i>Supper</i> , . . .		White bread, coffee.

DIET IN PRISONS IN GREAT BRITAIN.

<i>Breakfast</i> , . .	Three-quarters of a pint cocoa, bread.
<i>Dinner</i> , . . .	Sunday, . . . Four ounces cheese, bread.
	Monday, . . . Four ounces of mutton, half ounce of onions with bread, one pound potatoes, bread.
	Tuesday, . . . One pint soup, made of eight ounces shin of beef, 1 ounce pearl barley, three ounces of fresh vegetables; one pound potatoes, bread.
	Wednesday, . . Same as Monday.
	Thursday, . . . One pound suet pudding, made of one and a half ounces suet, eight ounces of flour, six and a half ounces water; one pound potatoes, bread.
	Friday, . . . Four ounces of mutton, half ounce of onions with bread, one pound potatoes, bread.
	Saturday, . . . Same as Friday.
<i>Supper</i> , . . .	One pint oatmeal gruel, bread.

The one great want in the prison is pure air. In the hospital, when it is full, seven beds are now necessarily occupied which are objectionable. For the rest, the room is ample (20,400 cubic feet in the ward, and 580 in each separate cell), sufficient ventilation could be accomplished by open windows, and there is an abundance of sunshine. Twelve patients can be accommodated there; and, for that number, the hospital is not open to serious objection, although windows and wooden ceilings in all the cells and a water-closet easy of access are to be desired.

In the lower arch for punishment, and for confinement of dangerous cases, and in the cells of the upper arch (all of this in the west wing), we find too little warmth or ventilation, or both.

Of the 652 cells in the three wings, we have seen that about one-fourth or one-fifth must be vacant in order to keep the

death-rate low, and this is very readily explained. In such case, a large number of cells would be left unoccupied in the north or old wing (built in 1829). The prisoners often complain of this wing as causing headache, nausea, etc., and the visiting physicians corroborate their testimony. In 1837, there were twenty-three cases of bleeding from the lungs, and fifteen of them were from the north wing.

From the accompanying table will be seen the relative accommodations of the different wings:—

TABLE NO. V.

WINGS.	Space in the corridors in cubic feet.	Space in the corridors to each convict.	Space in each cell in cubic feet.
South wing,	135,000	900	309½
West wing (cells are not all of one size),	99,000	500	309½ & 330
North wing,	139,840	460	171½

The estimated size for cells in the proposed new prison is 396 cubic feet. Suppose that the space now occupied by 304 cells of 171½ cubic feet each in the north wing were entirely reconstructed, even upon the basis of the south wing, there would then be room for only 174 cells, or 130 less than are now there. Even then the space to each prisoner in the open corridors would be only eight-ninths of that which each man has in the south wing. In such case, the prison, which now contains 689 convicts, has room enough for only 524 (say 500); and the hospital is about half large enough for the present number of convicts.

The ventilation in all the wings is defective; or, rather, ventilation, which consists in removing foul air and introducing fresh air, does not exist at all. The foul air is diffused pretty generally, and a certain condition of impurity is reached and remains rather constant.

In the south wing, the amount of air in the corridors and the large amount of air in the central guard-room (78,000 cubic feet), which connects freely by open bars with all the wings, probably obviates the difficulty to some extent for that

wing; but in the west, and especially in the north wing, there are conditions which, we think, call for some remedy. The evils of bad ventilation are aggravated from the fact that the buckets in the cells are of wood, with loose covers, and not provided with ventilating-shafts to carry off bad odors.

When the steam had been shut off long enough for the pipes to become cool, the air-meter indicated almost no circulation in the corridors; and, in the majority of the cells, the index did not move on placing the anemometer close to the ventilator. In some cases, there was found to be a draft of air coming into the cell from the ventilators; while, directly opposite the perpendicular ventilating-shafts, there was generally a feeble draft outwards. When the steam-pipes were heated, the condition was somewhat improved.

The following analyses, by Prof. W. Ripley Nichols, of the Massachusetts Institute of Technology, confirm the results obtained by the air-meter. The carbonic acid does not represent, by any means, all the impurities in the air; but it is, in the present state of science, the best attainable index of those impurities.

TABLE NO. VI.

Amount of Carbonic Acid in parts per 1,000.

Examinations of air, night of February 9. Corridors, close to cell-doors:—

10 P. M.	North wing, below,	. . . . .	0.942
	“ “ above,	. . . . .	1.13
	South wing, below,	. . . . .	0.84
	“ “ above,	. . . . .	1.00
1 A. M.	North wing, below,	. . . . .	0.98
	“ “ above,	. . . . .	1.09
	South wing, below,	. . . . .	0.95
	“ “ above,	. . . . .	0.88
	“ “ above,	. . . . .	0.95
5 A. M.	North wing, below,	. . . . .	1.04
	“ “ above,	. . . . .	0.94
	South wing, below,	. . . . .	1.04
	“ “ above,	. . . . .

Examinations Monday, February 15, after the prisoners had spent the greater part of one day and night in their cells:—

7 A. M.	North wing, upper corridor, outside of cells,	1.02
	Cell in North wing, top row,	1.46
	“ “ bottom row,	0.79
	“ South wing, top row,	1.33
	“ West wing, bottom row,	0.95
	West wing, lower floor, outside of cells,	1.21
	Solitary cell,	1.01
Feb. 11.	Brush Factory, down stairs,	0.86
	“ up stairs,	1.56
	Tucker Manufacturing Company's room,	0.89
	Bronzing-room,	1.16
	Bedstead shop,	0.91
	First School-room,	1.69
	Third School-room,	1.39
	Cutting-room (doors open),	0.63

Analyses for comparison :—

Average London air,	0.047
“ of 339 mines in England,	0.785
Bedroom (M. Leblanc), A. M.,	0.4
Opera Comique (Paris), pit,	2.3
Salle d'Asyle (Paris),	2.7
Average of 15 grammar schools, Boston,	0.144
Public Library, waiting-room, Boston,	0.193

It will be seen that the cells on the top corridors are the worst ventilated, but that none of them are as bad as the school-room; and it must be remembered that, between shops, school-rooms and cells, the prisoners have scarcely a chance to breathe pure air.

In conclusion, we would say that, although there are many defects which would be remedied if a new prison were to be built, yet, as far as we can see, there are none so serious as not to admit of remedies.

To recapitulate, we would respectfully represent that there are now four powerful influences tending to cause bad health among the prisoners :—

1. The present overcrowding of the convicts.
2. The bad ventilation of the various apartments.
3. The very offensive condition of the prison-sewage, which is now allowed to escape openly on the flats immediately adjacent to the walls.

4. The flats themselves,—open as they are to sewage from adjacent sewers.

It is somewhat hazardous to make predictions; but we think that, unless some remedy is adopted for the present evils, we shall have in the future only an increase of our present mortality, and that we shall be fortunate if no severe epidemic occurs.

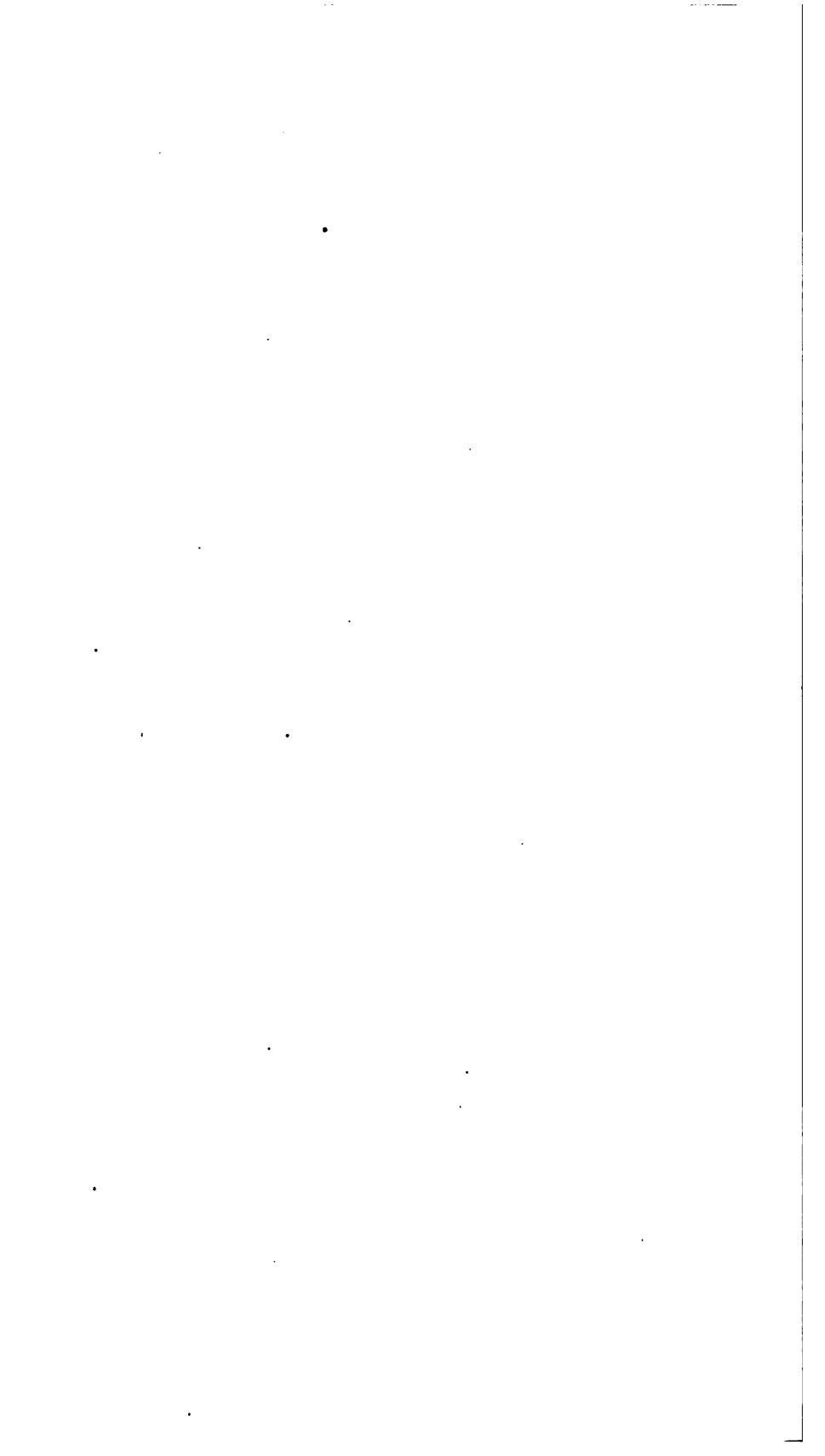
All of which is respectfully submitted,

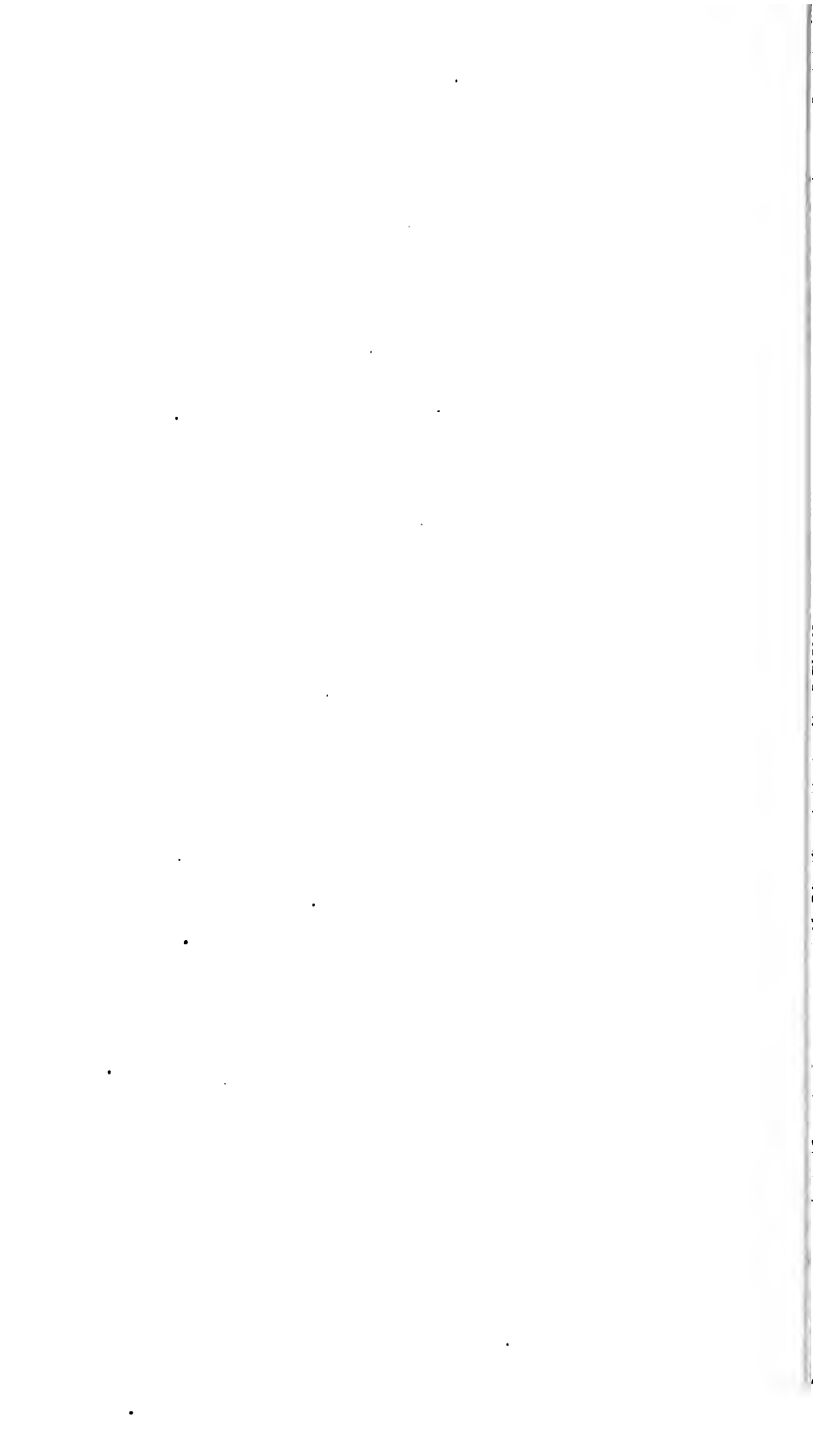
HENRY I. BOWDITCH.
RICHARD FROTHINGHAM.
CHARLES F. FOLSOM.

FEBRUARY 20, 1875.

At a meeting of the State Board of Health, held to-day,

ERRATUM. — 0.047, 0.785, 0.144, 0.193, page 378, lines 17, 18, 22 and 23, should be 0.47, 7.85, 1.44 and 1.93.





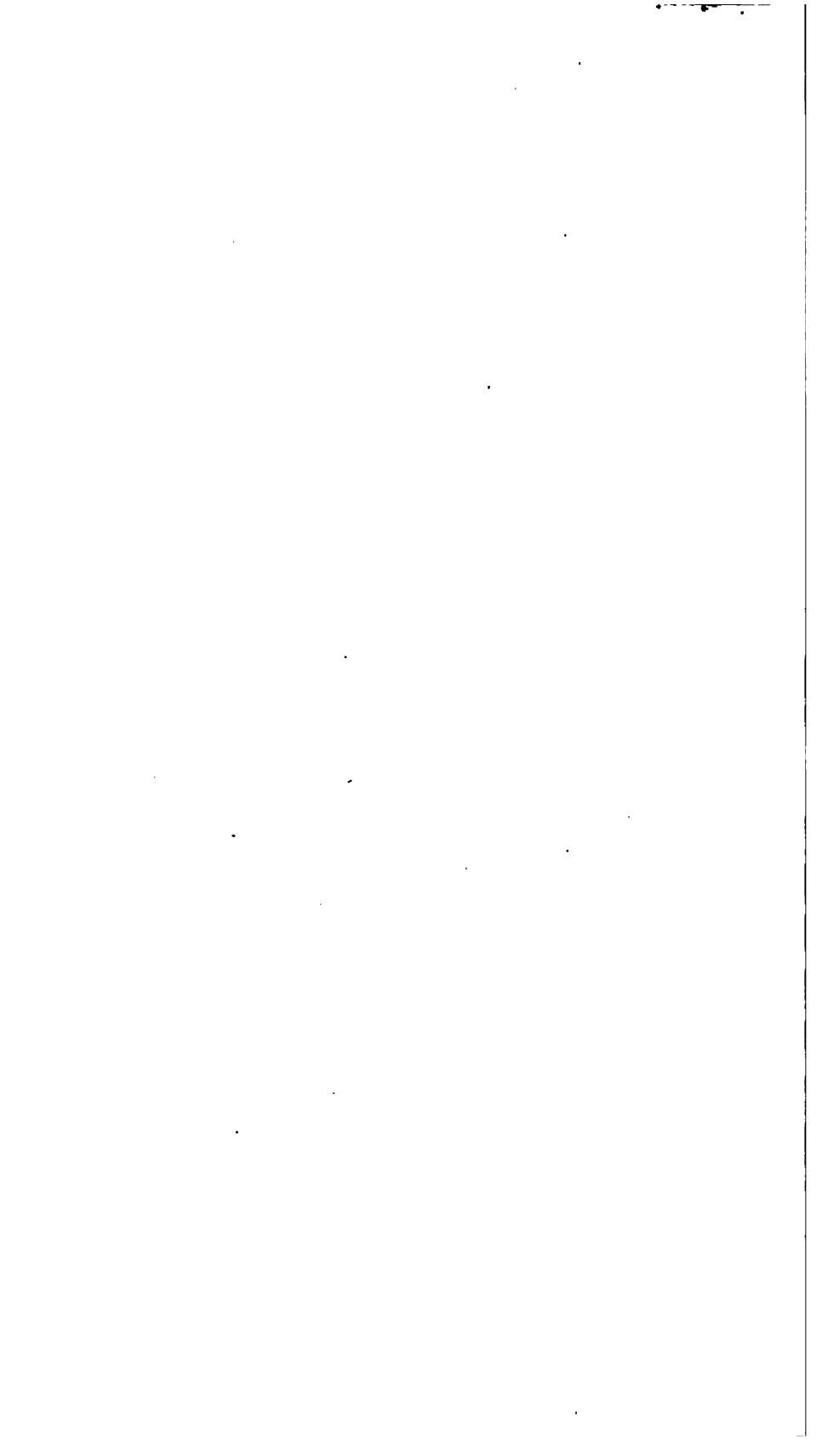
SIXTH ANNUAL REPORT

OF THE

BUREAU OF STATISTICS OF LABOR.

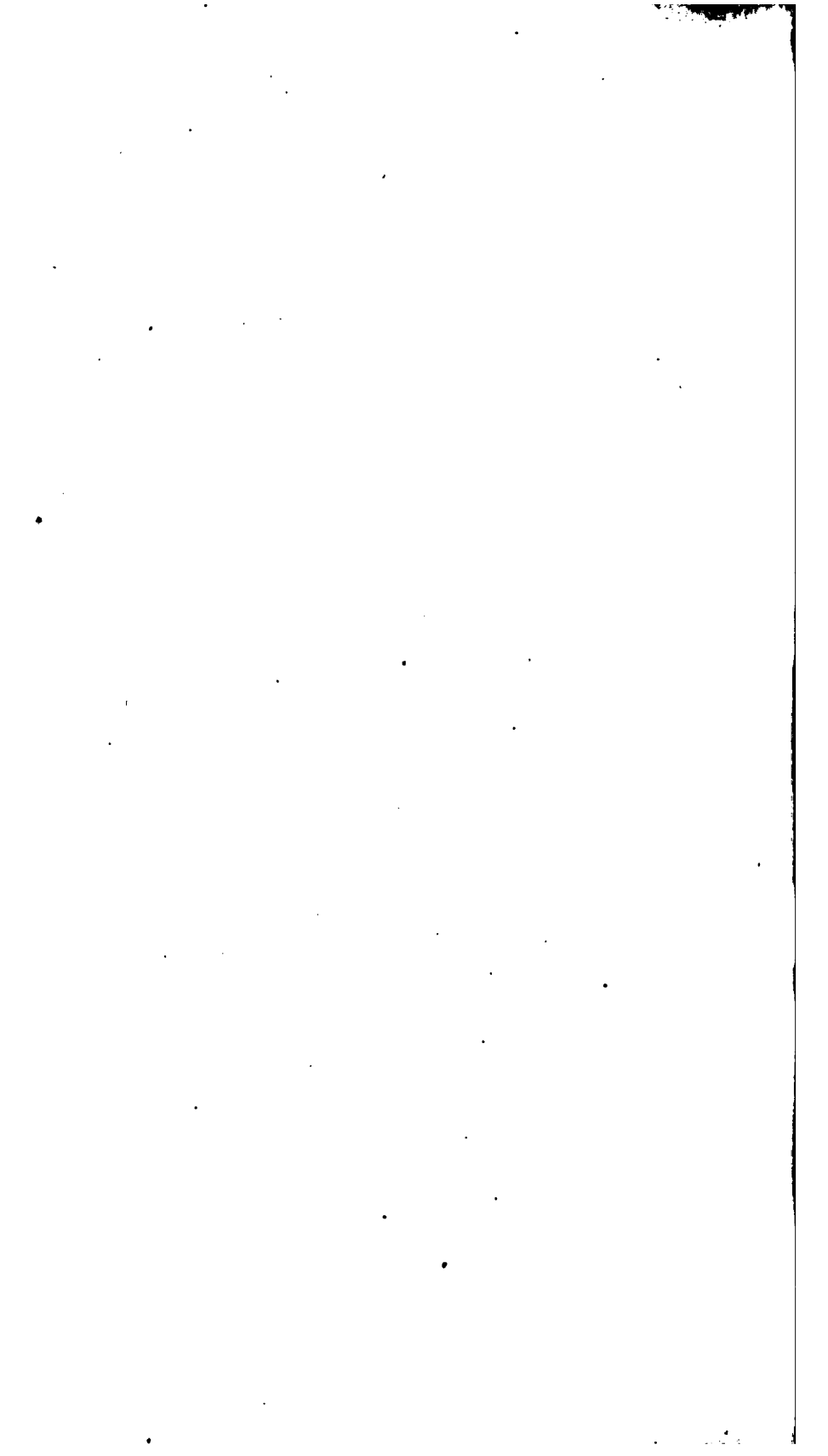
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MARCH, 1875.
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BOSTON:
WRIGHT & POTTER, STATE PRINTERS,
79 MILK STREET (CORNER OF FEDERAL).
1875.



CONTENTS.

	Page
Introduction,	vii-x
I.—The Education of Working Children,	1-63
II.—Special Effects of Certain Forms of Employment upon Female Health,	67-112
III.—Factory Legislation,	115-187
IV.—Condition of Workingmen's Families,	191-450
V.—Co-operation,	453-490
Index,	491-503



Commonwealth of Massachusetts.

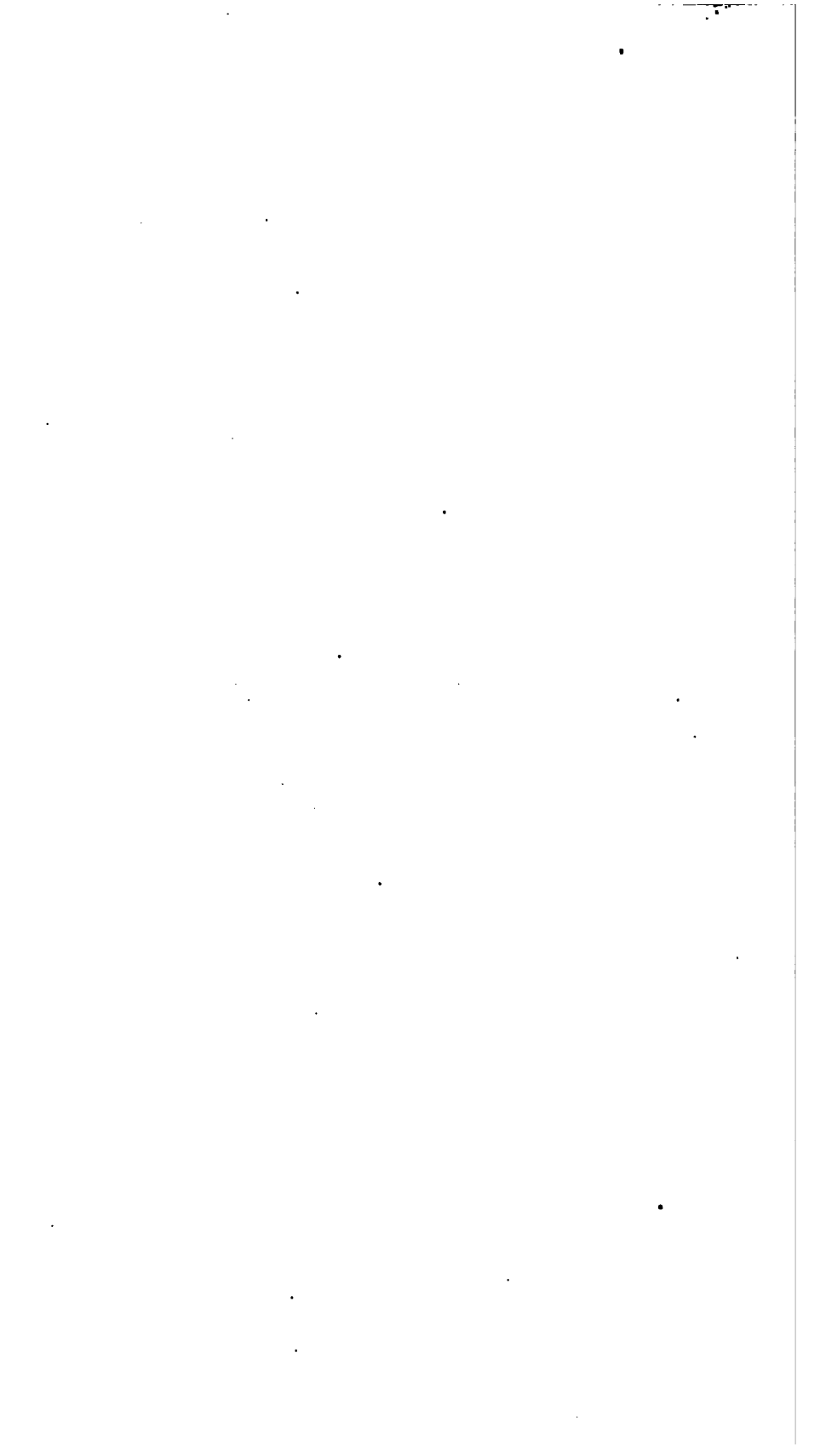
OFFICE OF THE BUREAU OF STATISTICS OF LABOR, }
33 PEMBERTON SQUARE, BOSTON, March 1, 1875. }

HON. JOHN E. SANFORD, *Speaker of the House of Representatives of Massachusetts.*

SIR:—We have the honor to present to the Legislature the Sixth Annual Report of the Massachusetts Bureau of Statistics on the subject of Labor.

Very respectfully, your obedient servants,

CARROLL D. WRIGHT, *Chief.*
GEO. H. LONG, *Deputy-Chief.*



INTRODUCTION.

We have seen no reason for changing the sentiments which, as we stated in our Fifth Annual Report, formed our guiding principle in conducting our investigations. We have, although besought and importuned, and sometimes threatened, by various interests to adopt this or that plan of procedure, endeavored to carry out our original idea of making investigations first, and, when satisfied of the facts, stating our conclusions fully and fearlessly.

The Sixth Annual Report of this Bureau, herewith presented, is the outgrowth of the fifth. We have here continued the subjects which, in the main, made up the last year's report.

Part I. of this Report is in response to the Resolve, Chap. 62, of the Resolves of 1874, and we earnestly commend the recommendations therein contained to the careful attention of the representatives of the people.

Part II. is a departure from ordinary official work, but we conceived it to be of the utmost importance, and, having laid the foundation for it in our last report, have here given the results of a much more extensive investigation into the effects of employment upon the young and developing female. The preparation of Part II. has been under the special charge of Azel Ames, Jr., M. D., of Wakefield, and he has done his work faithfully. Our thanks, and those of over-worked girls everywhere, are certainly due Dr. Ames.

Part III. should inspire legislative action, and we have clearly indicated what, in our opinion, as the result of full consideration, that action should be.

Part IV. is, perhaps, the most interesting feature of this

report, for it gives the condition, income, cost of living, etc., of three hundred and ninety-seven families in Massachusetts, and the various presentations of facts, deduced from the original returns, are novel and very valuable. We have in Chap. X. of this part taken for a basis of comparison an economic law propounded by Dr. Engel, of Prussia.

We know of no report, home or foreign, in which results have been based on so extensive investigations as those forming the foundation of the features presented in Part IV.

Part V. treats of co-operation, a subject gradually assuming more and more importance in the world, but on which but few reliable statistics have as yet been presented in this country. We have made this part as full and as complete as possible.

Besides the investigations carried on during the year closing March 1, 1875, and the preparation of this Report, the Bureau has, under the provisions of Chapter 386 of Acts of 1874, perfected the preliminary work for taking the Decennial Industrial Statistics and Census of the State. The wisdom of taking legislative action upon this subject a year in advance has been clearly demonstrated by the discovery of many additions which have been made to the industrial interests of the State during the past ten years, and which it would have been impossible to have recognized had legislation been deferred till the present session.

A great many towns reported industries which did not exist in 1865 or which were not then reported upon. One of the greatest errors in census-taking in the State and nation has been in deferring all legislation connected with it till just previous to the time when the work should be commenced. By virtue of the Act referred to, we have been enabled to adopt features in the collection, tabulation and presentation of facts that will give to the State, during the next session of the legislature, a full and complete statistical account of the industry of the Commonwealth. This work has demanded the attention of part of our force almost constantly since last July, and the office is now at work upon matter relative to the proper comparison of the presentations of 1875 with those of the past.

In our investigations and the presentation of results, we have received most valuable assistance from Mr. Charles F. Pidgin, Mr. Oren W. Weaver, Mr. Wm. Bower, Azel Ames, Jr., M.D., and Mr. Sam'l M. Barton, and to them as well as to Misses Cornelia H. Burroughs, Lizzie M. Davis, E. W. Harrington, Jennie R. Moorhead, and L. J. Sanderson, our warmest thanks are due, for each and every one has brought, besides the requisite ability, that interest in the work of the office which renders assistance doubly valuable.

We desire to acknowledge our obligations to Alsager Hay Hill, Esq., editor of "The (London) Labour News"; J. C. Farn, Esq., of the Manchester (Eng.) "Co-operative News," and to Messrs. Baker & Redgrave (London), Her Majesty's Inspectors of Factories. Various bureaus in Germany have kindly furnished us with late reports and documents. The three hundred and ninety-seven families who furnished the facts for Part IV., deserve also the thanks of this office.

The continuance of this Bureau is a subject upon which a variety of opinions exists. After the completion of the Industrial Statistics, to be taken this year, the legitimate work of the Bureau, under the existing law creating it, would be very limited, and could be conducted without the existence of a special department.

If it is desirable to continue investigations regarding labor, commerce, the industrial, social, sanitary and educational conditions of life in all respects, then the organic law under which the Bureau works should be broadened and power adequate to its desired usefulness be given it. A Bureau of Statistics on a broad and comprehensive basis can be of great service to the State. The prejudice against the Bureau of Statistics on the subject of Labor has been such as to greatly paralyze its work.

The very inception of the idea of creating the present department was under the excitement of labor movements, and the Bureau was an outgrowth of that excitement; now, it should be put upon a broader basis, or else abolished, and leave the subject of the establishment of a proper Bureau of Statistics to be regulated by future needs. There has been a perennial conflict regarding the office, and there always will be as long as it exists under its present organic law.

The nation sustains a Bureau of Statistics; several States are attempting to do the same; Massachusetts, above all States in the Union, should have a department devoted to statistics of all kinds, but such department should comprehend vastly more than is comprehended by the law which created this.

The Bureau, under the law of 1874, will accomplish more than it could ordinarily do in a dozen years, and one full report will be worth a dozen consecutive ones.

While we have aimed to make the accompanying Report valuable, its worth is slight compared with the value of a proper report under the law of last year.

The Bureau, then, should be allowed to complete the business specially imposed upon it by the legislature of 1874, and this would require at least from twelve to eighteen months, after which its investigations should be conducted under more comprehensive organic law, or its duties transferred to some other department, thereby avoiding the expense of a separate Bureau.

PART I.

THE EDUCATION OF WORKING CHILDREN.

CHAP. I.—INTRODUCTION.

CHAP. II.—*England*: THE BEGINNING OF THE FACTORY SYSTEM, AND
THE DEVELOPMENT OF LEGISLATION REGARDING THE
EDUCATION AND LABOR OF THE YOUNG.

Prussia: THE STATE OF EDUCATION AND BRIEF DIGEST OF
LAWS RELATING THERETO.

CHAP. III.—THE HALF-TIME SCHOOLS OF MASSACHUSETTS.

CHAP. IV.—CONSIDERATIONS REGARDING THE EDUCATION AND LABOR
OF THE YOUNG.

THE DUTY OF MASSACHUSETTS.

SUMMARY AND RECOMMENDATIONS.

PART I.

THE EDUCATION OF WORKING CHILDREN.

CHAPTER I.

INTRODUCTION.

In answer to a resolve of the last legislature [chap. 62, Resolves of 1874], a transcript of which is found below, the bureau submits the following report, embracing the matter contained in Part I of this volume :—

Resolved, That the bureau of statistics on the subject of labor is directed to prepare a plan for the education of children employed in manufacturing establishments, and report the same to the next general court, with the next annual report of said bureau.

By the words of the resolution, we are plainly restricted to the consideration of the subject of the education of one class of children only ; and, indeed, we could not properly be called upon to consider education except in its bearings upon the working class, its general concern being within the province of another department. We have not desired to depart from these limitations ; but, naturally, it would be impossible for us in the presentation of any plan for the education of this class of children, to avoid some discussion of the general principles of the subject, and the suggestions we have made are such that we have been compelled to a greater elaboration than would have been necessary or proper had they been different.

It is evident that our present system falls far short of supplying a sound elementary education to those children who are liable to be called upon to labor in our manufacturing establishments, and it is in this direction we have pushed our

investigations; and while the resolution calls upon us to prepare and present a "plan," we cannot intelligently comply without giving to the legislature our considerations upon the subject. That this may be of that broad character which the serious contemplation of a scheme for the best elementary training of operative children demands, we have thought it best to consider the matter from the governmental idea of our nation, and have, therefore, been obliged to weigh well the effect of factory school systems in countries where the monarchical idea prevails.

In our last report we clearly indicated a policy which we venture to hope the immediate future will see expressed in the law of this state, as it is already in the laws of some other lands. We then said, speaking of the education and employment of young persons and children: "We believe in the extremest legislation in this direction, and could we have the power given us, we would not allow a girl under sixteen years of age to be employed in any kind of a factory or workshop. If she could be free till she reached the age of twenty, mankind would be the gainer."

This expression met with such hearty and earnest approval upon all sides, all over the country, that we have taken it for the basis of the plan which we shall lay before the general court, feeling that if that plan is adopted or the way paved for its future adoption, mankind will indeed be the gainer, and the state saved serious consequences in the future. We believe that upon this subject hinge all labor questions, and that all issues which come up incidentally are but subordinate to it, and that when the state earnestly and actively undertakes the education or elementary training of the child-workers of the state, she will find no vexed labor questions which will at all disturb her peace; that when she learns, as Prussia has learned, and even as Brazil has learned, that the nation has as much right to clothe its pupils as it has to furnish them with books, fuel, rooms and teachers, she will be far on the way toward solving other difficult problems in social and political science, and in a condition for the consideration, without disturbance, of some of those vital, but, as now thought, æsthetic questions which bear upon the future soundness of our national structure.

In obedience to the demand of the legislature, we immediately entered into an examination of the educational facilities afforded to this class of children in some of the most highly civilized European states, and also in our own state.

The latter was performed by personal inspection of the few factory schools in the state, by which we were enabled, from contact with the teachers and pupils, to understand clearly the want which is to be supplied, to judge intelligently of the worth or worthlessness of the schools in operation, to perceive the tendency of the system, and to form a well-digested opinion as to the propriety of extending it. The result of that examination will appear in its proper place.

We have indulged but very little in statistics, for the reason that there are few that we consider reliable. There is no kind of information so valuable to the worker in problems of social science as the statistical, when it is derived from original investigation, honestly made, by competent persons; but when any of these requisites are wanting, it is the most misleading and worthless. The opportunities which have been afforded us by the action of the last legislature, we trust will result, another year, in supplying full and complete information respecting the condition of education in the state.

We have no doubt, from such data as we are able to obtain, that there are, as we stated in our last report, 25,000 children in the state, growing up without any, or but the slightest knowledge of the rudiments of education; but, in the absence of exact and trustworthy figures, we ask each citizen to consider his own neighborhood, to read the reports of local school boards, and to collate the result with the returns, respecting illiteracy, of the last United States census.

There exists in England a system of schools denominated "half-time," established originally for the education of factory children, but extended afterwards to the working children in other large manufactories, as the fictile, glass, and iron, and latterly to those in nearly all the small workshops where various trades and occupations are carried on. Yet these half-time schools are not such as we have. The half-time school of Massachusetts is a special school, maintained exclusively for children who attend school one-half of each day, for one-half of each year, and who work the other half day of

the same half year, and, presumably, the whole of each day of the remaining half year, and pursue this plan from year to year.

We have another kind of special school, commonly called half-time, but which is more properly a factory school, where children attend continuously for three months, and pursue their calling, which is chiefly that of auxiliaries to adults in factories, for the remaining nine months, repeating this process of three months' schooling and nine months' labor each successive year.

But in England no special schools exist for half-time scholars; but instead, a system of half-day attendance on any school which the parent may select. The children's hours of labor per day are restricted, and a certain number of hours' attendance at some school demanded for each day; or in some avocations the labor is full for one day and school attendance is intermitted, and surceases on the next and school attendance is required,—so that there are three full days of labor and three of school each week.

- We have given a somewhat extended synopsis of the various legislative acts erecting and affecting this educational scheme of England, and as the laws introducing and regulating factory inspection are concomitant with them, it seemed impossible to do this properly, without at the same time somewhat developing the latter. But the question of children's labor is of so much consequence in determining to what extent we can educate them, that we think the value of the results of our investigations is greatly enhanced by this method of presentation. And for the better comprehension of its bearings, and as showing its tendency, we have adverted briefly in the outset to the social state in a previous period, and the forces which played so important a part in changing that social state, developing thereby the necessity for legislation.
-

For many of the facts in this division of our subject, we are indebted to a recent work, written by Herr Von Plener, and introduced to the English public by Hon. A. J. Mundella, M. P.

It is a *valde mecum* of information relating to factory legislation and the education of working children in England.

CHAPTER II.

THE BEGINNING OF THE FACTORY SYSTEM IN ENGLAND.

In 1769, Richard Arkwright secured a patent for a process of spinning by rollers. This invention was the same in principle, though different in many of the details, as that devised by John Wyatt, an ingenious mechanic of Birmingham, in 1738. Wyatt's claims to originality of design were conclusively proved by Mr. Baines, in his history of the cotton manufacture, and by all writers since have been considered as established.

Arkwright took the principle embodied in Wyatt's machine, elaborated and improved its details; in short, made it work, and proved once more that "it is not the inventor, but the man who makes his fortune by the invention, that wins the honor." He had been a barber previous to this time, and lathered and scraped the jowls of all who came for a penny a piece; but whether his assiduity was insufficient, or his talents were not such as were needed for success in this ancient mystery, it is related that his friends, on an important occasion, made a subscription to purchase him a decent suit of clothes.

In 1792, this knight of the blade died as Sir Richard Arkwright, leaving to his son his factories, valued at two and a half millions of dollars. Fifty years later, this son, Richard Arkwright, Esq., of Wilersley Castle, possessed of fifty millions of dollars, accumulated by the labor of children who toiled daily in his factories from twelve to eighteen hours, followed his father, the whilom barber of Preston, to the abjection of the grave.

The period covered by the lives of the two Arkwrights, saw produced one of the most remarkable changes in a people that the world has ever witnessed. Previous to this invention, the spinning of yarn and the weaving of cloth had been

carried on in the homes of the people. The whirl of the spinning-wheel and the clack of the hand-loom were to be heard in every cottage. The children grew up beneath the eyes of the parents, whose earnings were ample to insure beef, mutton or pork, at least once a day, while the cloth which they wove was their own to wear or to sell. Quite different was it when, a few years later, the factory operative toiled fifteen hours a day at the manufacture of cloth which she might not wear, though she was the nearest to naked of any one in Britain.

In 1767, Hargreaves brought forward his spinning-jenny; but the spinners of his native county gathered in a mob, ejected him from his house, and while they handled his person roughly, they inflicted on his jenny an injury which touched him more sorely, for they utterly demolished it. He retired to Nottingham, and, in company with a Mr. James, erected a small mill. In 1770 he secured a patent on his machine. The water-frame of Arkwright (so called from water being used as a motive power) and the spinning-jenny of Hargreaves were immediately brought into combination. In 1785, Mr. Crompton, of Bolton, produced his spinning-mule.

In 1787, Dr. Cartwright established, at Doncaster, a weaving factory containing twenty looms, the power for which was produced by a bull.

Many of the first mills erected were driven by horse-power; but, very quickly, wherever there was a stream of sufficient fall of water, the modern factory, four or five stories in height and three hundred or more feet in length, arose. The application of steam as a motive power immediately followed. So that, in a period of about twenty years, England completely changed her system of manufactures; or rather she may be said to have destroyed it, for the delicate manipulation of the hand was no longer needed. Automatic machines, subservient to the will of a harnessed giant, superseded the skill of hand and strength of muscle. Domestic manufacture ended, and the social condition involved in it fell into decay. The cottager ceased to spin, since spinning a single thread he could not compete with machines which spun hundreds in the same time; his loom became silent from a similar reason,—and, from earning twenty-

eight shillings a week, he found himself unable to earn anything. So the acre of land on which, at odd whiles, he and his family practised husbandry, had to be given up. The factory seemed to be the only protection from immediate starvation, and to this he took not kindly; to his mind it but deferred starvation for a space, and its discipline and its restraints were unsuited to the free and uncontrolled range which had been generated in him. Moreover, not often were they situated in his immediate neighborhood; the new use for water-power led to their construction in remote districts, on the banks of streams which might furnish the needed power.

The time which gave rise to the phrase of "merrie England" waned rapidly. Twenty years saw the system of cottage manufacture decline to a merely nominal position and the modern factory system arise in its stead. The decline of the one carried with it much that was of value in preserving the social order and distributing with some considerable measure of equity the rewards and the obligations of labor. The advent of the other brought with it much that was subversive of all those pleasures and comforts which the word home suggests to English ears, and much that was destructive to the patriotism of the people; but the march of the human intellect, like the march of all conquerors, stays not for human suffering. The evils of the factory system were the evils inherent in the sudden accession of power; but, like the evils of lusty manhood, they depreciate with age as other appreciating powers come into play.

The cottagers showed a vehement dislike to the factories and a disinclination to work in them, and the manufacturers quickly discovered that a machine went neither faster nor slower with an adult workman to tend it than with a child.

Then began the slaughter of the innocents. Children were brought by thousands from the large cities and towns to the mills. The agent of a factory, desirous of obtaining five hundred or a thousand children, visited the overseers of the poor of a town or city and contracted with them for the requisite supply. Indentures were made out, and signed by both parties, by which the children were bound to the age of twenty-one; then they were handed over to their new masters.

Thus they were sold into a worse slavery than any the southern states of America ever knew, inasmuch as their masters were more avaricious, and the nature of their employment, unlike the agricultural slavery of the South, involved no waiting for the operation of nature's laws. The masters of the factories seldom visited them, and the overseers were paid for the quantity of cloth or yarn produced. Work continued from twelve to fifteen hours a day, and oftentimes more, while some more avaricious manufacturers employed a day and a night set of hands, and the machinery never stopped from week's beginning to week's end; so that it was a common saying in Lancashire that the children's beds were never cold. Herded together, for the little remnant of the night, in crowded dormitories, meagrely fed, scantily clothed, and forced to such continuous labor, refused the privilege of ever sitting down at that labor for a moment's rest, under the peril of brutal chastisement, it is no wonder that fevers broke out of alarming virulence. Deaths were so frequent in some factories that the overseers, out of a decent sense of shame or fear of public opinion, sent the bodies by night into other parishes to be buried.

The following table will show the ages at which children usually began work. This table is made up from returns obtained at the instance of the House of Lords, at a period some years later than that we are describing, but it illustrates the former as well as the later period. The investigation embraced the examination of six factories in Stockport.

Age at which they began to work in the Factories.

4 Years.	5 Years.	6 Years.	7 Years.	8 Years.	9 Years.	10 Years.	10 to 20 Years.	Above 20.	Total.
4	35	96	147	143	112	102	151	33	823

Sir Robert Peel, himself engaged in manufactures more extensively than most, was the first to really arouse the public attention to this condition of affairs. His speeches reviewed and exposed at length the evils which we have only glanced

at, and the bill which he brought forward for their mitigation was the first of a long series of legislative steps *which will lead undoubtedly to the prohibition of all labor for children, and provide compulsorily for their education.*

LEGISLATION REGARDING THE EDUCATION AND LABOR OF THE YOUNG.

In 1802, Sir Robert Peel introduced and secured the passage of a bill [24 Geo. 3, c. 73] "for the preservation of the health and morals of apprentices and others, employed in cotton and other mills, and in cotton and other factories."

This bill provided that, at all times, factories and mills should be properly ventilated, and that they should be white-washed twice a year; that the hours of labor should not exceed twelve a day, to be taken between six A. M. and nine P. M.; that night work should gradually diminish, and cease altogether in June, 1804; that each apprentice should receive a complete suit of clothing every year; that the sexes should be separated in their sleeping apartments; that they should be instructed in reading, writing and arithmetic during some part of each working day, and in the Bible on Sunday, and that the justices of the peace of each district should appoint two visitors, having supervision over the district, whose business it should be to procure the enforcement of the act.

This law was odious to the manufacturers, and operated for a time as a restraint upon those meditating the establishment of other factories; but the introduction of the new motor, steam, tended at once to the erection of manufactories in all the great centres of population, where the labor of the children of the neighboring inhabitants could be had, and the provisions respecting their care and maintenance be avoided.

So that, while the law of 1802, though poorly enforced, effected at first a great reduction in the number of children employed, the introduction of steam-power and the building of factories in thickly-populated districts again increased their numbers, and reproduced the evils which led to Peel's act.

In 1815, Peel came forward with a demand for the appointment of a commission to enquire into the condition of the children, which he secured. The committee constituting the commission reported in the following year, and, in 1819, Sir

Robert secured the passage of another bill [59 Geo. 3, c. 66], which tended somewhat to their relief. This bill limited for the first time the age at which children might be employed in cotton factories, establishing nine years as the lowest limit. Children from that age to sixteen were restricted to twelve hours' labor per day, or seventy-two per week, exclusive of meal times. Night work was also once more prohibited. Rules were laid down, however, allowing night work in certain cases, to make up lost time caused by the breaking of machinery or scarcity in the supply of water.

The excessive hardships imposed on the apprentices may be conceived from the provisions of these bills, which only asked for the mitigation that a restriction to twelve hours' labor a day would give. And this was exclusive of the time consumed in meals and instruction.

Certain supplementary statutes [60 Geo. 3, c. 5] were afterwards added, one of which allowed the manufacturers to appoint the meal times at such hours as would best suit their convenience; but no further provision was made for the education of child-workers.

In 1825, Sir John Cam Hobhouse carried a bill [6 Geo. 4, c. 63] which, besides repeating many of the provisions of the two former bills, and stipulating penalties of a special nature against the transgressors of the law, shortened the labor on Saturday.

The first English law which made attendance at school for a portion of each day compulsory for factory children, was passed in 1833 [3 and 4 Will. 4, c. 103]. It required daily attendance at school for at least two hours, and provided for two entire and eight half holidays in the year. It fixed the maximum number of hours of work per week, for children from nine to thirteen, at forty-eight, making sixty hours per week of school and work. It restricted the hours of labor of those above twelve and under eighteen, designated "young persons," to twelve hours per day, or to sixty-nine per week, but did not extend to this class daily attendance at school. In silk factories, however, children under thirteen were allowed to work ten hours a day, and also to be admitted before the age of nine. It prohibited work between the hours of 8.30 P. M., and 5.30 A. M., to all persons under

eighteen employed in cotton, wool, worsted, hemp, flax, tow, and linen spinneries, and weaving mills. Certificates as to age were required from a surgeon or physician, and provision was made for the enforcement of the law by providing for the appointment of four inspectors, with a penal jurisdiction concurring with that of a justice of the peace.

Out of respect for what was conceived to be the interests of manufacturers, the law was not to become operative, for children under thirteen, until March 1, 1836.

This was the beginning of the half-time school system in England.

With regard to the "young persons" from thirteen to eighteen, manufacturers found various ways of evading the spirit of the law, without incurring any very severe penalties. As there was nothing to prevent their acting as justices of the peace, many procured appointments to this office, and it cannot be supposed that offenders, under such circumstances, were very severely punished. The overworking of several children simultaneously, was construed as one contravention of the law only, and the transgressor let off with the fine for one offence (on an average about £1 10s). So also in many places, by a peculiar system of relays, the intention of the law was rendered null and void.

But with regard to those under thirteen, the regulations were so strict as regarded schooling, and considered so onerous by manufacturers, that they obviated the inconvenience at once by discharging them and employing "young persons" in their stead. In 1835, before this act had come into full force, there were, in 3,164 factories, 56,455 children; in 1838, only 29,283 children were employed in 4,217 factories.*

Von Plener says, "Children's labor, rendered so inconvenient by the school regulations, was, wherever it could be done, supplanted by machinery, and all the sooner in those manufactories where the fly-wheels used to be turned by children. In the same manner the difficulty which frequently arose, immediately upon the introduction of the factory legislation, of procuring the requisite number of

* Reports of Inspectors of Factories, October 31, 1836, p. 19, and April 30, 1837, p. 73.

children for the double-working set, led to the employment of machinery as a substitute. The reduction of the working day could only be balanced by an increase of production through the machines, and though the astonishing progress of machinery in the first half of the present century (in the shape, especially, of the self-acting spinning and weaving machines), was, to a great extent, caused by the general conditions of production, it is an indisputable fact, that it was factory legislation which gave the direct impulse to the introduction of many of the time-saving machines."

The factory act of June 6, 1844 [7 Vict. c. 15], reduced the working time for children of eight (no longer nine) to thirteen years of age employed in the textile industries (except in silk-throwing mills, where children of eleven years of age were allowed to work ten hours daily, and were not compelled to attend school), to six hours and a half per day. The working day was still considered as running from 5.30 A.M. to 8.30 P.M., and no child that had been occupied in the morning was allowed to work in any factory on the same day, after one o'clock P.M. As a concession, those factories where the labor of young persons was restricted to ten hours a day were also allowed to employ children for ten hours, but only on three alternate days of the week. Parents or persons having any direct benefit from the wages of the children, had to send each of them to school for at least three hours daily during the first five days of the week. In winter, two hours and a half in the afternoon were considered sufficient; thus securing to the children fifteen hours' schooling a week, in place of twelve, as provided for by the act of 1833. Those children who worked ten hours, on alternate days, were to attend school for five hours on each non-working day.*

Certificates for school attendance had to be given weekly, and were to be filed by the manufacturer for examination by the factory inspector. The school fees, which were to amount to no more than two pence per week, were allowed to

* This alternate system remained in its application far behind the half-time system. In some cases, as in dyed-wool factories, it proved advantageous. Report of Inspector of Factories, April 30, 1850, p. 40.

be deducted from the children's wages by the employer, but at no higher rate than the twelfth part of the weekly wages.

Inspectors had a right to enter a factory, and all the rooms therein, at any time; to inspect the certificates and registers; to examine each person on the spot, and to require them to make a formal declaration of the truth of their depositions; to dispense with school attendance; to require, with the authority of a justice of the peace, the services of constables, and to summon witnesses and accused persons.

The fines for employing a protected person contrary to the provisions of the statute, and a child without a certificate of school attendance, were from £1 to £3 for each protected person, if the illegal employment were during the day, and from £2 to £5 if it occurred during the night.

Every repetition was to be considered as a fresh offence.

Parents were liable to a fine of from five to twenty shillings, for giving their consent to the illegal work of their children, as well as for neglect in sending them to school.

Among the industries examined into by the children's employment commission, the calico print-works were found to be especially injurious to children. Long hours, lasting oftentimes to far into the night, in hot, unhealthy rooms, a total lack of any school instruction, combined with low wages, made the condition of the children employed in them one of the most wretched existing.

A law was passed, therefore, in 1845 [8 and 9 Vict. c. 29], containing provisions similar to the factory act of the previous year in respect to inspection, fines and certificates of age. Its regulations in regard to school instruction proved to be extremely defective.

In deference to the demands of the manufacturers, who claimed that the nature of the work was such as to make any regular attendance at school for a portion of each day destructive of their value as employes, a minimum of thirty days, aggregating one hundred and fifty hours of schooling, was required within the six months immediately preceding their admission to the factory, and during each subsequent six months of their employment.

Experience proved that these provisions for the education

of this class of children were productive of no particular improvement in their condition.

By the passage of the supplementary act to the ten-hour bill, August 5, 1850 [13 & 14 Vict. c. 54], children above eleven years of age, employed in silk-throwing and silk-winding mills, to whom ten hours' work had previously been permitted, without being liable to school attendance, were placed on the same footing as young persons over thirteen, in other textile factories. Every protected person found working, or even staying in the factory, during the time set apart for meal-time, was to be held as illegally employed.

The act of 1850, which up to the present day regulates the working time of the great mass of factory laborers, applied only to young persons and women, so that children from eight to thirteen still continued to work under the law of 1844, which made the working day begin at 5.30, A. M., and end at 8.30, P. M.

Many manufacturers now availed themselves of the permission given by this law, to employ children for ten hours on alternate days, and thus, with two sets of children working and attending school alternately, furnish their adult laborers with an adequate supply of juvenile assistants. With this arrangement there was quite general satisfaction among manufacturers; and the inspectors, likewise, were pleased with its beneficial working, as more regular attendance at school, and a neater personal appearance, were insured; yet the latter felt obliged to interfere, as it involved the working of the children for ten and a half hours a day, during five days of the week.

In order to adapt the children's working day to that of the young persons and women, an act was passed August 20, 1853 [16 and 17 Vict. c. 104], establishing their agreement, by making the working day for children identical with that for young persons and women.

With this law the legal restrictions, in regard to work in the textile industries, ended; and, though the entire legislation of the various acts had been directed to the amelioration of the condition of the women and children employed in them, and to the establishment of a shorter day of labor for them, it resulted, *de facto*, in reducing the working day for adult

male laborers to the same limits, since the former class of workers, being employed as auxiliaries to them, they could not, generally speaking, begin work earlier, or end later, in the day, than the women and children.

Now arose the demand among the workers in other great industries for an application of the factory legislation to themselves.

The mitigation of the condition of the employés in textile factories threw into more especial prominence the hapless state of the children and young women employed in brick-yards, in glass-works, in fictile manufactories, etc. A royal commission was appointed to investigate these and other departments of trained labor, the result of whose recommendations was the extension of most of the provisions of the factory acts, during the period of a few years, successively, to bleaching and dyeing works, bake-houses, mines, fictile manufactories, percussion-cap making, lucifer-match making, cartridge making, paper staining, fustian cutting, chimney sweeping, hosiery and lace making, metal industries, gutta-percha factories, paper-mills, glass-works, tobacco manufacturing, printing-offices, book-binders' shops, and, finally, to all establishments where fifty or more persons were employed at the same time for a period of one hundred days at least.

The principal features of the English half-time school system may be summarized as follows:—

No child shall be admitted to work in any of the industries mentioned, until he has completed his eighth year (in fustian-shearing establishments, the eleventh year).

Children from eight to thirteen years of age shall work only six and one-half hours per day. The day shall be from six, A. M., to six, P. M., in summer, and from seven, A. M., to seven, P. M., in winter.

The child shall attend school at least three hours per day, or five hours on each alternate day, at any school the parents may select.

Employers shall insist that every week, certificates of punctual and regular attendance at school shall be submitted to them.

Employers, when so ordered by the inspector, shall pay twopence a week per child to the schoolmaster, which they

may deduct from the children's wages, but at no higher rate than one-twelfth of their weekly earnings, the obligation of making up any deficiency always devolving upon them, and never upon the parents.

The institution of half-time schools, or, to speak more properly, since no special schools were provided by the acts of 1833 and 1844, the compulsory attendance upon some school for half the day, was the erecting of a new principle in English legislation; the principle of the right of the state to interfere with the hitherto divinely-held right of the parent to keep his child in ignorance if he chose.

Dr. Johnson said that "we have no right to make people happy against their will;" but that was the object of all this legislation.

It has resulted in the Elementary Education Act of 1870, a broadly-conceived scheme for the assimilation of all the endowed and other schools into one public school system, substantially free, and for the establishment of new schools where necessary. The right to command compulsory attendance is placed in the hands of the local school boards, subject to the approval of the education department.

The effect of this series of legislative enactments upon the culture of the people has not been so particularly noticeable as upon their health, as the sanitary regulations and the reduction of hours has applied, directly or indirectly, to all, whether male or female, old or young; while the educational provisions, applying only to children, and being for a considerable time, and in many sections, but indifferently enforced, the improvement in the literary condition of the people has been less marked.

In this connection it may be mentioned, that the fact that children become liable to school attendance only upon arrival at the age when they may be employed in labor, leads many parents to neglect all earlier education.

The throstle, or factory leg, the swelled joints, the stunted figures, of the earlier decades of the century, have mostly disappeared, and an average of good health, comparing favorably with the general health of the community, has succeeded; but illiteracy, more or less complete, may still be said to be the rule among the children of the working population.

Mr. Joseph Kay, who was commissioned by the University of Cambridge, England, to travel through Western Europe and examine the comparative social condition of the poorer classes, writing in 1850 of England and Wales, basing his statements on the reports of the inspectors of factories and of the schools-inquiry commission, says, "It has been calculated that there are at the present day, in England and Wales, nearly 8,000,000 persons who can not read and write."*

Mr. Kay shows that the convictions for crime are greater in the rural districts than in the manufacturing, in England and Wales.†

This is an exhibit of peculiar interest, and seems to point to the more general prevalence of education among the latter as the only reasonable explanation of it; since it is commonly conceded that, other things being equal, crime is more prevalent in manufacturing districts. The incitements to it are far greater, and the restraints which exist generally in nearly all agricultural communities, and operate so powerfully,—the neighborhood police, and the publicity which attends every man's action, and follows his crime like an avenging Nemesis,—are much less.

In Massachusetts we find an exactly contrary state of things. Although we have no figures at hand, we presume no one will deny that the convictions of crime are far more in our manufacturing towns than among the same number of people following agriculture.

Now if Mr. Kay's statements are to be believed, whatever weight is to be attached to the relative importance of the aggregation of individuals within restricted limits as affecting crime, it is completely counterbalanced by the greater weight of educational training. That his statements must be believed, no one who examines the evidence presented can doubt.

Wherever we seek for facts bearing on this question, and whatever we find, affords constantly recurring proof, that the morality of a community depends to the fullest extent on the diffusion of education.

In 1866,‡ of the whole number of children intended to be

* Social Condition and Education of the Working People in England, p. 252.

† Id. p. 36.

‡ Von Plener.

employed in factory work, 40 per cent were unable to name a single letter. In the cotton districts, in which the original half-time school law of 1833 was most especially applicable, 37 per cent, in 1866, of the children under sixteen were unable to read, and in the pottery districts, where the law had been but two years in operation, 74 per cent were unable to read.

The following table, given by Inspector Baker, shows the average condition of large portions of his districts :—*

NUMBER OF HANDS EXAMINED.	Can Read but not Write.	Read and Write.	Neither Read nor Write.
In brick-works, near Stourbridge,—			
Under 18 years of age,	8	16	7
Between 18 and 30,	20	40	18
30 and 50,	3	15	14
50 and 70,	2	4	5
In tin-works, in the same neighborhood,—			
Under 18 years of age,	4	15	18
Between 18 and 30,	11	33	23
30 and 50,	12	28	11
50 and 70,	4	5	5
In glass-works, in the same neighborhood,—			
Under 18 years of age,	4	48	3
Between 18 and 30,	5	36	5
30 and 50,	1	29	2
50 and 70,	—	2	1

This is truly a deplorable state of affairs ; but, in reflecting upon it, we are not to consider so much in relation to what ought to be, under a form of government rightly founded, and controlling and directing its citizens by laws wisely conceived and equitably administered, as, to consider what actually is and must be, in a government which came into existence centuries ago, assuming to itself in its inception and strengthening with its growth a certain rigidity of form, until it presents itself to the modern world pregnant with prejudices of many kinds, which hamper its expansion and render peculiarly difficult the work of introducing and making generally

* Report of Inspector of Factories, Oct. 31, 1873, pp. 89 and 90.

applicable so novel an idea as that of universal education. The age has but just passed when the English baron imprinted his sign-manual with his swordhilt, and boasted that he could neither read nor write; two hundred years ago a knowledge of letters was a mark of effeminacy excusable only in a priest. And the time is almost within the memory of living men, when it was not considered worth while to give any schooling to the girls of a family. The coming man, for many centuries, everywhere in Europe, was the warrior and the courtier. Letters were left to the ministers of religion, not always the safest keepers.

To appreciate rightly the value of the half-time school system to England, we must look back to the state of her common people before the inauguration of such schools, and compare it with their present state. One striking feature, however, presents itself in examining into the condition of the working classes in the earlier part of the present century. And that is, that it seemed to be the cruelty inflicted on the bodies of the operatives, by their unremitting labor, which led to all the succeeding legislation that has resulted in so lessening their illiteracy; for it has steadily lessened it, bad as it yet is. The necessity or desirableness of education to the common people had not yet grown into any particular prominence in the minds of the ruling classes; but the inhumanity of the prevalent physical slavery touched the springs of their consciences, and inaugurated a series of legislative enactments in which the interference in favor of the bodily powers will in the future grow less and less, as the need of it will have decreased under a growing humanitarianism, and the obligations imposed, in respect to the care of the mind, will have multiplied and extended.

In all the hundreds of volumes relating to the state of the laborer, in all the reams of testimony given before committees and royal commissions, there is but little said, comparatively, about the lack of education among the poorer classes, or the propriety of lessening it; while thousands of pages are given to the testimony of physicians respecting the health of factory operatives, the diseases peculiar to them, the deformities incident to their work—to the testimony of the operatives themselves, who came from all parts of the king-

dom to show their deformed limbs and shrunk and stunted bodies—and to the statisticians who presented volumes even, bristling with figures relating to vitality; figures which proved (no man can doubt who, at this later day, examines them) that the average length of life of the factory operative was less than half that of the rest of the population.

By the census of 1871, there were in England 94,346 children attending half-time schools,* nearly all of them coming under the Factory Acts of 1833 and 1844. And this number of children, through the efforts of the inspectors, has been constantly increasing since.

In Manchester they have grown from 1,527, by the census of 1871, to 3,422 at present (Oct. 31, 1873). In Birmingham, in 1867, they were 264, while now there are upwards of 4,000.†

Now it would seem, at first glance, that it must be impossible for so much illiteracy to exist as is stated on page twenty, when so large a number of child-workers are at school half the day.

But a little deeper examination into the subject will bring to light some other facts which will serve to reconcile these two statements.

The selection of the school is left to the parent, and one of two things seems quite generally to result.

If the parent is willing to obey the law, and is in fact rather desirous that his child should have some education,—though his avarice or the desire of means to gratify his passion for drink might have outweighed this and led him to keep his child at work twelve or fifteen hours a day before the restrictions of the law existed,—he will probably select the best school within reach, or at least one fairly good; but he soon learns that the master of this school will not receive pupils who are to be present only ten to fifteen hours a week, divided into several periods of constantly varying length and succession.

"Here is our first stumbling-block. Managers and school-masters of inspected schools are ever ready to help; but when these little outcasts go to school when it pleases them,

* Report of Inspector of Factories, Oct. 31, 1873, p. 129.

† Report of Inspector of Factories, Oct. 31, 1873, pp. 88 and 129.

morning or afternoon, Monday, Tuesday or Wednesday, as caprice may dictate,—disarranging organization, rendering teaching of little use, and in reality exercising a depressing influence on the school, when it is tested by a comparison of attendances with names on the books,—no one can be surprised that work shop children are not sought for or even considered desirable to be retained.

“Thus, after having induced managers to receive these half-time children, the results are so unsatisfactory that they are refused, generally upon the ostensible ground that the school is over-crowded, and we are driven to accept mere apologies for schools, and, greatly to our dissatisfaction, to countenance what is after all a mere mockery of education.” *

If, on the other hand, the parent does not believe in education for those of his rank in life, and wishes that his child should grow up in the good old way that he himself did, and know “nowt about larnin,” instead of selecting the best school, he will be likely to select the poorest; since it will answer the purpose of the law, it will be the cheaper, and, quite likely, it will be the nearer, and it is not at all unlikely there will be no other. Now while the English undoubtedly excel us in the higher education which some universities and preparatory schools give, yet they fall so much below us, on the average, in those schools which give what we are wont to call a common-school education, that the poorest of these latter is something so exceedingly poor as to be hardly conceived of by a New Englander.

It is safe to characterize the schools for giving an elementary education to the children of the working classes, as very inferior indeed.

The teachers themselves are often, and, indeed, quite generally, hardly able to do more than read and write, and the school-houses in many sections are not much more than hovels, and destitute of all proper appointments.

To be sure, great improvement is now being made, but we are speaking of what has been.

Our object has been, so far, in this chapter, to present something of a picture of the social condition of the people

* Report of Inspectors of Factories, April 30, 1874, p. 9

in England, as well as an exposition of the half-time school as found there, that it may be seen under what circumstances the latter is useful.

And, in concluding this division of our subject, we must say, that the conditions of life there, social and political, are so different from our own, that we feel that the transplanting of this peculiar system of schools to our own country would bring with it some of the surrounding elements in which it thrived, and out of which it drew its sustenance.

If it did not bring with it, or, when here, attract to itself, such elements, it would attain no vigor among us.

And if, as we think would be the case, it did bring or create for itself such elements, we should expect the results to be injurious to us in many ways.

PRUSSIA: THE STATE OF EDUCATION, AND A BRIEF DIGEST OF LAWS RELATING THERETO.

The principle which rules, in all the laws relating to education, is, that every child in the kingdom *must* be educated.

"No child, without the permission both of the civil magistrate of the town or village of which its parents are inhabitants, and also of their religious minister, can be kept from school beyond the completion of its fifth year, or afterward discontinue its attendance on the school classes for any length of time."

The laws of some provinces require their attendance till the completion of their fourteenth year; but if the parents are very poor, and their children have learned to read, write, and cipher, with tolerable facility and correctness, and are familiar with the principles of religion as professed by their parents, the religious minister may, upon consultation with the teacher, and acquiescence on his part, issue a permit at the end of the twelfth year, for the child to cease attendance at school.

To insure attendance, each teacher is furnished by the local magistrate, at the beginning of every year, with a list of all the children of the district who have attained the proper age to attend his classes. This list the teacher calls over morn-

ing and afternoon, and all absentees are marked down. Every one on the list is considered as due at the school every day, unless excused. The absentees must be reported to the minister of religion, who remonstrates with the parents.

If this is not effectual in procuring attendance, the minister is required to report such fact to the school committee, which has power to punish the parent with a very light fine, not more than about twelve cents a day while the absence continues.

If the child still remains absent, the committee report the case to the magistrate, who has power to punish the parents with imprisonment.

Absence for a day or two can be granted or excused by the teacher; if for a week, only by the minister; and for a longer time, only by the magistrate.

Are these laws enforced, it may be asked. By statistics taken from the "Centralblatt," August, 1864, which gives the condition of the schools in 1861 (quoted by Mr. Barnard, "Popular Education," vol. 1, p. 424, *et seq.*), it appears that the number of children of school age (from five to fourteen inclusive), was 3,090,294. In the public elementary schools there were 2,875,836, and in the private schools, 84,021, making a total of 2,959,857.

This is between ninety-six and ninety-seven per cent of the school population. But the balance of three to four per cent., or 130,437, is not all, by any means, to be reckoned as growing up without instruction. In the lower classes of the two hundred and fifty higher schools are many children between five and fourteen years of age; enough, probably, to reduce this number quite materially.

It would be still further reduced if the number (not known) of those educated at home, under tutors and governesses, were subtracted.

So it may be safely stated, we think, that ninety-eight per cent of the children of Prussia are receiving instruction.

Education is, of course, gratuitous, as in most of the German states. Moreover the district authorities are com-

pelled to clothe and furnish with books all children whose parents are unable to do so.

Laws were made in 1839 and 1853 regulating the employment of children in factories and insuring their education, of which the following are the principal provisions taken from Kay's "*Social Condition and Education of the People*," and from Von Plener's work previously mentioned :

No child may be employed in any manufactory, or in any mining or building operations before it has attained the age of twelve-years.

No child which has not received three years' regular instruction in a school, and has not obtained the certificate of a school committee that it can read its mother-tongue fluently, and also write it tolerably well, may be employed in any of the above-mentioned ways, before it has completed its sixteenth year.

An exception to this latter rule is only allowed in those cases where the manufacturers provide for the education of the factory children by erecting and maintaining factory schools.

Children who ought to attend school must henceforth (May 16, 1853) be employed no longer than six hours daily, and receive daily at least three hours' instruction at school.

This instruction may be given them at manufactory schools, erected at the cost of the manufacturers, or else at the public schools. But in most cases regulations are to be made that the children who work in the forenoon shall receive their instruction in the afternoon; and those who work in the afternoon shall receive theirs in the forenoon.

Young people, under sixteen years of age, may not be employed in manufacturing establishments more than ten hours a day.

The manufacturers who employ children in the mills are obliged to lay before the magistrate a list containing the names of all the children they employ, their respective ages, their places of abode, and the names of their parents.

If any inspector or teacher reports to the civil magistrate that any child under the legal age is being employed in the mills instead of being sent to school, or if the police report

the infringement of any other of the above-mentioned regulations, the magistrate is empowered and obliged to punish the manufacturer by fines, which are increased in amount on every repetition of the offence.

We have not thought it necessary to give any *résumé* of the laws of other countries bearing on this subject; but the leading governments are moving in unison in this matter. Switzerland, perhaps, is at the head of all others.

In our last report will be found a brief synopsis of her laws, showing the position she occupies.

The legislation of all European countries, since legislation was first had, respecting the employment and education of children, seems to point in one direction; namely, the prohibition of all labor for gain for them, and compulsory education.

True, in no one of them has this end been yet actually attained; but the progress towards it has been constant and rapid, and no one who gives the subject sufficient investigation can fail to conclude that it will be speedily reached.

The most of this legislation has occurred within forty years. The limitations first were to children of eight or nine years of age, and to twelve hours a day; then the termini of the day were fixed so that the labor should be performed by daylight. Again, the hours were dropped from twelve to ten, and the age raised to ten, eleven or twelve.

Meanwhile their employment in certain dangerous, or particularly unhealthful occupations, was prohibited altogether. This list of dangerous and unhealthful occupations has extended and become more inclusive; the age at which labor was permissible has advanced to fourteen, fifteen, and even sixteen years, and the hours per day for children above the specified age has steadily decreased until six hours is now quite general. Aside from this limitation of their labor, there have been, throughout all this period, constantly multiplying provisions for their health and safety. And above all, universally, the hours taken from labor have been given to education.

Noting this progress, and knowing that the coming genera-

tion will be more universally educated, is it too much to expect, that, within a comparatively short period, the laws of most European countries will insure that childhood shall no longer be confounded with maturity and forced to carry the burdens and perform the duties belonging to the latter?

We think it is not, and trust that in this march onward toward individual and national perfection, Massachusetts and this western world may be in the van.

CHAPTER III.

THE HALF-TIME SCHOOLS OF MASSACHUSETTS.

Salem.—This school was opened June 7, 1869, in the ward room of ward five.

Its establishment was brought about by the report of the sub-committee of the school board which "had been previously directed to consider and report concerning the enforcing the law in relation to the attendance at school of children employed in manufacturing establishments."

It is kept in operation for the whole twelve months of the year, with the exception of the legal holidays; two sessions per day, of two and one-half hours each, are held for five days of the week. The pupils are mostly children, between the ages of ten and fifteen, employed in the Naumkeag Mills.

They are formed into two divisions; one attending school in the forenoon and working in the mills in the afternoon, and the other working in the forenoon and attending school in the afternoon.

This continues for six months, when these two divisions enter the mill to become whole-day workers for the balance of the year, their places as half-time workers and scholars being filled by two new divisions from the mill.

This is the theory of the system, but in actual practice it has no such rigidity as the exchange semi-annually of a large body of half-day workers for a corresponding number who have been whole-day workers would indicate.

Of the whole number who begin together a six months' half-day attendance at school, but a moiety, or perhaps less,

will continue uninterruptedly to the end; very many, from sickness or other unavoidable causes, will be absent for longer or shorter periods, which must be compensated for to the extent of the loss, by continuing their attendance into the succeeding six months.

Each scholar is required to attend one hundred and thirty half-days. If but a half-dozen have been inconstant in their attendance, an element of irregularity has been introduced which will be multiplied at the succeeding periods of semi-annual change, by other half-dozens who have absences to make up, until very soon that condition is reached which we found there, when every week the term is expiring for some and beginning for others.

It is the custom of the teacher in this school, once a week, to inform the agent of the mill of the number of vacancies which have been created during the week by the expiration of the scholars' required term; whereupon the agent examines his books and sends out to the school all who are called for by the law.

This constant accession of new scholars, coming mostly in mere dribbles of one, two or three, makes the labor of the teacher doubly onerous and lessens greatly the progress of the pupils.

Added to this, their great diversity of gifts and attainments makes any such thing as classification and gradation nearly or quite impossible.

Those who attend school in the forenoon, work five and one-half hours in the afternoon; and those who attend in the afternoon, work five and three-fourths hours in the forenoon.

Those who are not attending school work not over sixty hours in a week.

The wage which each receives, when not attending school, is \$2.64 per week; when attending school, \$1.75.

To correspond as nearly as possible with this increase, piece-workers, while attending school, receive a gratuity of fifty cents a week.

In other words, when in school, all receive for their half-day's work, two-thirds of a day's pay.

A time-table of attendance at school is kept, in the same form as of labor at the mill, and being regularly transmitted

to the agent, the same deductions in wages are made for the former as for the latter.

Yet this has not sufficed to prevent the evil of absenteeism just mentioned.

The whole number of scholars in attendance at its opening, June 7, 1869, was,	. . . . .	54
Boys,	. . . . .	25
Girls,	. . . . .	29

On the first of January following there were in attendance,	. . . . .	73
Boys,	. . . . .	42
Girls,	. . . . .	31

Whole number of different scholars from June 7, 1869, to January 1, 1870,	127
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Average number belonging each half-day,	31
Average attendance,	29.1
Per cent of attendance,	93.8

On the first of January, 1874, the whole number of different scholars during the preceding twelve months had been,	. . . . .	283
Boys,	. . . . .	170
Girls,	. . . . .	113

Number coming from the mills,	. . . . .	193
Boys,	. . . . .	113
Girls,	. . . . .	80

Average number belonging for each half-day,	. . . . .	43
Boys,	. . . . .	29
Girls,	. . . . .	14

Average number attending for each half-day,	. . . . .	39
Boys,	. . . . .	26
Girls,	. . . . .	13

Per cent of average attendance,	. . . . .	90.7
Boys,	. . . . .	89.6
Girls,	. . . . .	92.8

Average number of mill children belonging each half-									
day,	.	.	.	.	.	.	.	.	30
Boys,	.	.	.	.	.	.	.	.	18
Girls,	.	.	.	.	.	.	.	.	12
Average number of mill children attending each half-day,									
	.	.	.	.	.	.	.	.	28
Boys,	.	.	.	.	.	.	.	.	17
Girls,	.	.	.	.	.	.	.	.	11
Per cent of average attendance of mill children, .									
	.	.	.	.	.	.	.	.	93.3
Boys,	.	.	.	.	.	.	.	.	94.4
Girls,	.	.	.	.	.	.	.	.	91.6

It must be borne in mind, in examining these statistics, that they are given for each half-day, and that as they cover the attendance of four sets of children in the course of the year, in order to a proper comparison it is necessary to quadruple some of the figures; thus 43, the average number belonging each half-day, and 30, the average number of mill children belonging each half-day, must be multiplied by four in order to a just comparison with 288, the whole number enrolled, and 193, the number coming from the mill.

Or the one-fourth of 288—72, and of 193—48, may be compared with 43 and 30.

The pupils, other than those coming from the mills, are principally, or we might say wholly, children from the street.

Of those employed in the mill, nearly all are of French-Canadian birth. Many, upon their entrance, are unable to speak or understand English, and the instruction at first is necessarily in both French and English.

The studies pursued are purely elementary, and the average of attainment is little, if any, above that in primary schools.

Fall River.—This school was opened on the first day of April, 1863, and is denominated in local terms a "factory school." It is not a half-time school, like the school for mill children in Salem; but it is established on the plan of requiring the remission of all labor for three months of each year, and daily attendance at school for that length of time.

At the opening of the school, April 1, 1868, the attendance was enforced of one-third of all the children of school age in

the mills ; at the end of twelve weeks these were allowed to leave, and their places supplied by a second third, and these in turn by the remaining third ; so that the first year all the children received their schooling in nine months ; but on the first of January, 1869, only one-fourth were drawn for the ensuing term, and one-fourth in every succeeding term.

The following is the form of a blank, a sufficient number of which are left by the master of the school, during the last week of each term, with the agents and overseers of every mill in the city, who are expected to fill them out with the names of all children whose certificates do not exempt them from school attendance for the coming term ; they are then returned to the teacher, so that upon the opening day of the term he has in his possession the name, age and residence of every child hitherto employed in any mill, who ought to be in attendance. If there are any who do not appear, the truant officer is dispatched for them :

Names of children sent from *Mill to Factory School*
for the term commencing *187 .*

NAMES.	Age.	Residence.

Agent.

Received,

Teacher.

On the first day of the term, or whenever a new scholar enters the school, the teacher makes the proper record in a book called the "Record of Daily Attendances." The facts shown can be seen from the heading of one of its pages, which is as follows :—

NAME OF SCHOLAR.	AGE.		Residence. (Street.)	Mill where last worked.	Date of Entrance to School.	Date of Departure from School.
	Yrs.	Mos.				

The concluding entry is made in the last column,—“Date of Departure from School,”—when the scholar completes the term and leaves the school.

The teacher also keeps what may be called a ledger-account, with each mill, in which the mill is credited with each child sent to the school, and debited, at the proper time, with the certificate given to each.

The following is an exact copy of a page from this ledger, the names only being changed :—

DR. 1873.	MERCHANTS MILL.	1873, CR.
Mar. 24. To Certificate of Mary Kenney.	Dec. 30. Mary Kenney,	Spool Room.
" 30. " " " Patrick Collins.	" 31. Patrick Collins,	Mule "
" 20. " " " John Foley.	" 31. John Foley,	" "
" 25. " " " Mary Brown.	" 31. Mary Brown,	Weave "
April 23. " " " Napoleon Dupond.	Jan. 7. Napoleon Dupond,	Spool "

Below is the form of certificate given to each pupil upon completing his or her required term of attendance.

SCHOOL CERTIFICATE.

1874.

For the First term of the year ending March 31.

This Certifies that _____
has completed on this _____ day of _____ the term of three
months in school, in accordance with the provisions of the law.

Age, _____. Residence, _____.

WM. CONNELL, Jr., *Supt. of Schools.*

DIRECTIONS.

This Certificate is good until the first of Jan., 1875. It is to be taken by the Overseer when the child is employed, retained during the time he is at work, and given to him when he leaves to obtain work elsewhere or to attend school.

No child under fifteen years of age has a right to be employed in any manufacturing establishment unless he can present such a certificate to the employer.

Certificates of 1873 are good until the child is called out of the Mills to attend school in 1874.

These certificates are printed upon colored card-board; the color of the card is different for each term of the year, but for the corresponding terms of different years always the same; so that it indicates the term for which it was given. This certificate is good until the corresponding term of the next year. Mill-agents are said generally to agree to assist in enforcing the law, by refusing to employ

children of school-age without they present a properly dated and signed certificate.

Certificates are given, at the end of twelve weeks, to every pupil who has not been absent during the term; those who have absences to make up are required to do it in the thirteenth week, or as much of it as possible. There are usually but a very few that have to remain into the ensuing term to accomplish this; and these do not increase from term to term, as is the case at Salem, since they are considered as due at the school at the beginning of the corresponding term of each succeeding year.

We made special inquiries as to whether any children continued in school for two or more terms of the year, but were informed that not more than one or two in a hundred exceeded what the law demanded in respect to the length of their attendance.

The average age is about twelve years, the extremes being ten and fifteen; there are more of the former age than of the latter.

In nationality, the Irish lead; the French follow next, and the English next, finishing off with a few of other nationalities. We found but one scholar in this school who was not, when out of school, an employé of some one of the various mills of the city.

There are six classes in reading, six in spelling, six in arithmetic and two in geography.

Lessons are given in writing on certain days in each week, and there are general exercises every day in history, geography and arithmetic.

The poorer scholars are just taking the first steps in education, and the better are somewhat more than fitted for admission to a grammar-school. Two sessions daily are held, three hours long, each being broken by a recess of fifteen minutes.

The whole number registered the first terms of three successive years was:—

First year—Boys, . . .	107	Girls, . . .	91
Second year, “ . . .	116	“ . . .	103
Third year, “ . . .	120	“ . . .	89
<hr/>		<hr/>	
Total—Boys, . . .	343	Girls, . . .	283
Total of both, . . .		626.	

Received certificates, 596 ; moved out of town, 30 ; average attendance, 201 ; per cent of attendance, 87.

The whole number registered for the year 1872-73 was 1,218, or an apparent average of a little more than 300 different pupils to each term.

The actual average attendance, however, was but 171.

Forty different mills send children to this school.

The whole number registered for the year 1873-74 was 1,051, or an apparent average of a little more than 260 different pupils to each term.

The actual average attendance, however, was 185.

Following is a tabulated statement, prepared by the school committee and appended to their last annual report, of the number of pupils entering this school each year since its establishment ; the mills from which they were sent out, and the number to whom cards were given indicating that they had attended school the required time. No record has been kept of those children who attended the required time in other schools.

Number of Children Received into the Factory School, from each Mill, and Number of Cards Issued.

MILLS.	1869.		1870.		1871.		1872.		1873.	
	Entered.	Cards issued.	Entered.	Cards issued.	Entered.	Cards issued.	Entered.	Cards issued.	Entered.	Cards issued.
Merchants, . . .	69	62	84	70	82	80	46	43	59	52
Granite, . . .	47	45	45	43	48	46	68	61	72	64
Union, . . .	86	80	89	77	90	83	58	57	51	43
Troy Manuf'g Co., .	63	57	50	48	53	51	50	47	45	36
Robeson, . . .	28	26	25	24	33	29	27	25	24	21
Davol, . . .	28	26	28	26	23	22	20	18	22	20
Durfee, . . .	68	63	53	50	84	79	90	86	88	79
Tecumseh, . . .	29	29	27	25	24	21	36	35	44	41
Woollen, . . .	10	10	11	11	10	10	10	10	9	9
Pocasset, . . .	43	41	53	48	34	31	22	21	28	24
Quequechan, . . .	40	36	52	51	54	50	28	26	34	30
Watuppa, . . .	26	26	26	25	33	33	29	26	29	25
Robeson P't Works, .	36	35	32	30	33	32	20	20	11	10
Anawan, . . .	30	26	24	21	19	17	9	9	17	14
Metacomet, . . .	56	51	50	48	45	42	33	33	38	30
Linen, . . .	143	134	138	132	108	108	68	67	76	65
Massasoit, . . .	25	23	25	22	15	10	6	4	8	7
Globe P't Works, . .	29	26	19	15	15	13	7	4	12	9
Thread Mills, . . .	3	3	3	3	5	4	3	3	3	3
Mt. Hope, . . .	2	2	6	6	5	5	—	—	1	1
Amer. P't Works, . .	3	3	65	59	71	68	75	75	88	83
Fall River M'f'g Co, .	—	—	21	21	26	25	29	26	38	34
Cigar Manufactory, .	—	—	2	2	—	—	—	—	—	—
Cooper's Shop, . . .	—	—	2	2	—	—	—	—	—	—
Miscellaneous, . . .	—	—	22	17	13	10	30	16	10	6
Harness Shops, . . .	—	—	3	3	—	—	2	2	9	9
Wampanoag, . . .	—	—	—	—	—	—	—	—	4	4
Stafford, . . .	—	—	—	—	—	—	—	—	20	15
Crescent, . . .	—	—	—	—	—	—	—	—	27	20
Borden, . . .	—	—	—	—	—	—	—	—	33	26
Slade, . . .	—	—	—	—	—	—	—	—	8	7
Mechanics, . . .	—	—	—	—	—	—	—	—	1	1
	864	804	965	879	927	869	766	712	913	775

New Bedford.—In January, 1872, the school committee of this place opened a special school for mill children. The Wamsutta and Potomska mills furnish the most of the pupils.

It is conducted on the same general plan as the one at Fall River, and has usually from forty to fifty scholars in attendance, who are of widely varying ages and attainments.

Upon the day of our visit the youngest present was of the

age of six, and the eldest, twenty-one. There were twenty-three who gave their ages as ten and under.

The number of different children belonging to the school, during the year 1872, was about 175, and during the year 1873, about 150.

The average attendance for each month of the latter year was thirty-five.

Indian Orchard.—The half-time school, at the village of this name in Springfield, has been discontinued. The school authorities have always expressed themselves in their annual reports as highly pleased with what the school was accomplishing.

It was closed in the fall of 1873, and the only reason given by the single member of the school board whom we were able to find on our visit was, that "times were so hard that parents wanted their children to work, and as the school was small (it has usually numbered about thirty), it was thought best to discontinue it for the present."

This school has been noticed in previous reports, and its plan of work explained at some length.

CHAPTER IV.

CONSIDERATIONS REGARDING THE EDUCATION AND LABOR OF THE YOUNG. — THE DUTY OF MASSACHUSETTS. — SUMMARY AND RECOMMENDATIONS.

The signification of the word education is, to lead forth; that is, to lead forth the faculties; or, to change the figure, to project, so to speak, each faculty into its proper prominence; to produce an harmonious and well-balanced mind, by a fit development of each, having respect always to the others.

This is what education really means. Superficially, it means, with most, book-learning; and at the present stage of social growth, as reflected in law, it is in this limited signifi-

cation only that we can consider it. The philosopher who has studied into the growth of societies and governments, and has arrived at some inkling of the forces which underlie their progress, and the lover of his kind who makes the wish the father of his thought and springs at once to the most hopeful view of human evolution, will alike believe that the depths of meaning in this word will all be sounded in the future, and the breadths of its significance comprehended and embodied in human government and made universally applicable.

If words stand for anything, education means culture ; and book-education is so valuable a help to this that it is not strange that it is popularly conceived of as identical with it.

Hence, there is no people raised sufficiently out of ignorance to perceive this relation, that have not striven for it. Now, if it is valuable to the individual, it must be valuable to masses of individuals or nations. If it is something which one should strive for so earnestly and suffer so many privations to obtain, conceiving that he will be richly rewarded in the end, it is, likewise, something which the state, which is but many individuals, should aspire for, for all, and hold as dearly worth attainment for all. If a knowledge of books is worth something to me, and makes me a better citizen of the state and a better man of the community, it would be worth just as much to any one of the thousands in Massachusetts who cannot read a line I am writing. If it is a means of culture, of development, of expansion for me ; if it broadens my horizon and gives me glimpses into realms of thought unsuspected before, it will do a similar work, and proportionately, as our natural parts correspond, for any one else.

It will not make all geniuses, which is fortunate for the state ; for genius, which is the extraordinary development of a few faculties, accompanied quite often by a corresponding suppression of others, is not wanted for all ; but it will do better than this : it will make all, men.

In most governments, and most ages, genius has been stimulated. Kings and nobles have been its foster-parents. Under their protection it has had unlimited range, subject, of course, at times, to caprices on the part of its protectors. Wealth, also, could ever provide, or find provision for itself. The rich and the inspired were always well off under any

government. Aristocracies and monarchies have divided their powers with them.

Broadly stated, there is no use for a republic, or democracy, unless it does for the humblest what other states do for the highest; and this not by relieving him of exertion and constituting itself a reservoir of supplies from which he may draw at will, but by stimulating his exertions.

The best relief for the individual poor man is not ready money, but work. If he is capable of doing no work well, fit him for doing something well, and thenceforth he will provide for himself. There isn't an intelligent voter in the state but understands this fully, and knows that when he gives ten dollars in charity he has struck but the feeblest blow at poverty. He is ashamed, even, of the weakness of heart which leads him to throw his money into this bottomless pit. On the other hand, he knows just as well, that when he trains and directs a young man's faculties and puts him in a position where he may exercise them at advantage, that he has contributed something towards the aggregate of self-sustentation and lessened by so much the volume of ignorance and poverty. Not to sustain, but to make self-sustaining, is what is needed. If this is true for the individual poor, and the individual uneducated, it is true for all poor and all uneducated men. What other forms of government do for the few, it is the business of ours to do for all. A beggar should be an anomaly in a republic. He is as out of place as if he were a king. And a *citizen*, and yet unable to read and write! The Prussian *subjects*, who possess not this slight relief from the odium of complete illiteracy, are less numerous than the Massachusetts citizens. A government "of the people, for the people and by the people," should do better than that.

The fact is, we believe all this; every intelligent person in our communities believes it. We utter it freely in the pulpit, the press, the counting-room and on the street. Especially do we give a loud voice to it on the Fourth of July. Not either as an idle sentiment do we believe it; not either do we believe it as a glittering sophistry caught from the demagogue's frothy flux of words, which dazzles us somewhat by its brilliancy, but whose hollowness we know. We

believe it in all its depth, breadth and fullness. It is even an instinct with those of us of New England birth and education.

We think we are stating no more than a conceded fact, when we declare that it is to the extent that we have allowed these views of individual rights, as to education, to permeate our legislation and find free course in our institutions, that we have waxed strong and prosperous. But the trouble is, that we have not enough embodied them in action; *while we have had for years what, out of respect for words, we will call a compulsory school law, we have had but very little of compulsory school attendance.* The universality of education has been the theory of New England, and especially of Massachusetts from the formation of our Commonwealth; but if we examine the history of our state critically, we shall find that we have never taken this question out of the realm of theory and transferred it to the realm of fact.

There are many serious questions now agitating society, and many others which will agitate it when these shall have been settled, the solution of all of which really depends on this question of education. The question of the extension of the suffrage to the other sex is already being discussed in the great and general court of public opinion, and is even now being handled by some legislative and judicial bodies. The question of the suffrage is one of the most important that can engage the attention of the American citizen. It is claimed, by those who think they can see somewhat into the future, that its extension to women is but a question of time. If it is to become an accomplished fact within the immediate future, it is likely to increase the proportion of illiterate voters, since there are more illiterate females than males; and especially is this true of the population of those European countries from which we draw the most of our immigrants. If this result is reached, and women become voters, it is extremely essential that their education should be adequate to the proper discharge of their new duties. On this account it is important that their school-life should be as extended as possible, since, from the domestic nature of the employments of most of them in after-life, they have little opportunity for the acquisition of general and current knowledge, which, in

the case of the illiterate man, stands him in good stead in exercising the duties of citizenship.

But, whether they are to become voters or not, they are still to remain citizens; and it is a question in many thoughtful minds if their influence is not as wide in the one condition as the other. So that, whatever views one holds on the propriety or likelihood of the extension of the suffrage to them, the most vital of all questions will still be, are they educated or ignorant.

Another question which seriously threatens to impair the democratic fabric of our institutions, and substitute a nobility of its own creating in place of the nobility of the individual, is the rapidly increasing power of capital in this country, and the dominion it exercises by right of its purchasing power,—a form of dominion more likely to be disastrous to everything valuable in a people than where it is the mere concomitant of a pseudo or fictitious rank. At a comparatively recent period in our history, when every one labored more or less with the hands, and the employer carried on only small enterprises, involving his constant intercourse with his workmen and even participation in their labors, this evil, so threatening now, had not appeared. The opportunities for acquiring wealth are so many in a new and undeveloped country like our own, and its acquisition is something so entirely independent of individual education and culture, that a strong and growing tendency has been produced to the establishment of a class, the admission to which depends wholly on dollars.

It is not the place here to enter into a discussion of the legislation which might be entered upon to prevent the growth of individual fortunes, or to say whether any legislation would be justifiable; but we think it is proper to point to this tendency which is so alarming to every lover of democratic institutions, and to suggest a legitimate way of preserving somewhat more of the equality of fortune befitting the common citizens of a republican country.

The money-making faculty is not dangerous to society except when it escapes the control of the moral and intellectual faculties. The best of faculties which human nature possesses become destructive if inordinately exercised. The trouble is, that we are letting wealth get out of the leash of

the heart and intellect. The remedy, in a large degree, it seems to us, for this overhanging domination of capital, is in the elevation of the masses; and the first step to be taken is to educate them better. To produce a depreciation of the power of wealth, there should be an appreciation of the power of education. Let a greater and more universal stimulus be applied to the culture of the mind; let a love for literature, art and science be made more common; let the affections and the moral nature be more thoroughly awakened; let all this be done, especially in what is commonly called the lower half of society, and we shall find we have greatly circumscribed the influence of wealth. Let the state stimulate anew the cause of education, and see to it hereafter that not one child, who isn't a lunatic or an idiot, grows up to manhood or womanhood within her borders, without a good fair common-school education, such an education as can only be acquired by constant attendance at some really good school for all the years from five or six to fifteen, and she will have settled forever all likelihood of wealth's ever acquiring any undue influence. She will by that means make so universal the respect for the æsthetic, that the simply useful will lessen somewhat in our regard. Then at last we shall discover that the æsthetic is also the useful, and the useful, properly used, is the æsthetic.

The increasing prevalence of crime is another evil which has within a few years assumed threatening proportions.

With the criminal classes, we deal too much in a punitive rather than a preventive way. We cannot prevent crime by punishing it, nor can we outwit it and frustrate its accomplishment by any or all the devices which experience and study may suggest. The only way to reduce the aggregate of crime is the educational way. By any other way, we simply deal with results and do not correct causes. The statistics of all countries show that the mass of criminals are not only substantially uneducated, but even wholly so. The effects which will be produced by education, in each individual case, as regards the diminution of the probabilities of the commission of crime by that individual, inhere not only in the strengthening of his moral nature and the development of his intellectual, but in the lessening of the

stimuli to crime by the multiplication around him of others educated like himself, and by the presentation of means of securing more happiness, of acquiring better subsistence and more sure, by reputable courses.

It may be urged that many criminals are well educated, and that murder, which is often committed in the heat of passion, would be as likely to occur even if the murderer were educated. Without stopping to consider the improbability that any one who is *well* educated can at the same time be guilty of crime, we may reply that, in general, all crimes, great and small, must be less in educated than in uneducated communities, and that in an educated community, the rarity of crime will operate most powerfully as a check, as now its frequency seems to beget a familiarity that lessens our horror and serves even amongst all to increase the temptations to its committal.

The most of those to whom drunkenness proves a curse are ignorant and uneducated. At least that is the class that is ranged daily before the bar of justice. We do not pretend to speak with exactness on this point, but we presume every one would admit that there are more drunkards among the ignorant and illiterate, or half-educated, than among the better educated. The fullest development of the intellectual and moral faculties will tend to act as a restraint upon the imbibition of intoxicating liquor; for with the reason in free play, the curse of the love of drink will be forecasted, and, in a healthy moral nature, will be condemned.

That great apostle of education, Horace Mann, says: "Many, if not most, of those great questions which make the present age boil and seethe like a cauldron, will never be settled until we have a generation of men who were educated from childhood to seek for truth and revere justice."

Who can doubt that if every child in America was properly trained and educated from infancy to man and womanhood, that great crimes in private life and crying abuses in public, would either cease to exist or become so uncommon as to excite a proper degree of horror; that the degradation of abject poverty would be removed with its cause, and that that worse degradation, the degradation which great and misused wealth brings to its possessor, and to all who come

within the circle of its baneful influence, would no more exist? To doubt this is to doubt the truth of the republican idea.

When ignorance becomes in a measure general, the jealousy of classes begins to operate, and either with good or indifferent reason, the ignorant knowing not always the cause, but feeling only the result, think their rights infringed on, and partial or complete anarchy takes the place of order. The enlargement of individual rights and privileges must bring with it a corresponding enlargement of individual development, else we are but giving greater scope to a wild and reckless power that may, at any moment, at the suggestion of its unregulated strength, arise and take us by the throat. If we increase the power of action we must, to the same extent, perfect the power of restraint.

The principle of universal suffrage is a national blessing only to the extent that it is educated suffrage. The creation of more voters, to be bought by demagogues, is but a subtraction from the aggregate national strength. We have seen in other countries the attempts made to found republics on corner-stones of ignorance, and we have seen the results; and we shall always see the same result when the same causes operate. They made a sovereign of each individual, and then left him with but the education of a peasant. To the extent that we fail to properly educate every child in the Commonwealth we repeat the mistake; and Massachusetts can never be a Commonwealth of kings till each child has a kingly education. We can never be said to have given the republican idea a fair trial until this has been done. Whatever proportion we have of equality of possessions and subjection to law, of good government and ready obedience, we can safely ascribe to the comparatively general diffusion of education; and whatever we lack of all these can as truly be ascribed to its scarcity.

Separated from the rest of the world by natural barriers, having a country fresh to our hands, we are trying the republican experiment under the most favorable circumstances. The only balance of power we have to maintain is what inheres in a wide-spread knowledge; the only stand-

ing army, the school-masters. Our degree of success will be measured by our appreciation of these facts. Neither the possession of the ballot, nor fulsome laudation of that system of government which gives it, will alone make us a great and vigorous nation; nor, indeed, materially contribute to anything but our more speedy destruction. Our real strength subsists not in this, though our real weakness may. It subsists in the culture of the individual, and as long as we have individuals without any great degree of culture we are in danger. For the adult ignoramus we can do, substantially, nothing; but his child we have in our hands, or may have. We can see ourselves being distanced in the general diffusion of education by some of the nations of Europe which we have been wont to characterize as "effete despotisms"; and if we make no haste to equal or surpass them, we may yet see the positions of America and Europe reversed.

It is the wont of many most excellent people to say, that education is more generally diffused in Massachusetts than in any other part of the world. But this is a matter most easily disproved by the statistics of Prussia, of Switzerland, of Holland, and of some other countries.

So, too, it is argued that we open the school-house door to every child, of every race, sect and degree, and if they grow up in ignorance beneath the very shadow of the temple of education it is their own fault, or of those who have to do for them. Well, it may be their fault, but it is our misfortune after they have become voters. With only education enough to meet the requirements of the voting law, and that, perhaps, acquired solely that they may make merchandise of their ballots, they endanger, by their concerted action, the stability of every law and institution.

It seems to be a fact that was not contemplated by our legislators in the earlier days of our history, and is not even now sufficiently realized, that there should be any considerable number of parents who would not only permit but force their children to grow up in ignorance. In the conversations which we have had with agents of mills, with members of school committees and others having a knowledge of the facts, it has been repeatedly and universally stated, that many parents, who are operatives, are so determined upon getting

their children into the mills, that they resort not only to the most barefaced lying in regard to their ages, but teach their children the necessity of backing up their assertions.

These are the children to whom, most of all, the state should prove a foster-parent.

The rich will be educated whether she assists or not, and those in moderate circumstances to some considerable extent; the cultured themselves, of all conditions, will provide, to a greater or less degree, the opportunities for learning to their offspring; but the poor and the ignorant, for whom are free schools meant if not for them? And if so poor as to be unable to make use them, and so ignorant as to be impassive to their advantages, are they not then, by virtue of their poverty and their ignorance, the very ones for whom we have builded school-houses and provided teachers?

Moreover, we should realize that avarice is as predominant a passion among the ignorant and apparently poor, as among the wealthy. The instances of parents possessed of sufficient means to raise their families above want, to give them comfortable homes, pleasant surroundings and a good education, who yet house them in dirt and squalor, clothe them in rags, and drive them daily to the factory to add still more to the savings-bank deposit, are not few.

A mill overseer recently pointed out to us a man and wife and two children at work, whose combined monthly wages exceeded one hundred and fifty dollars, over \$1,800 per year. for the support of four persons; and yet these children, of the tender age of twelve and fourteen, were toiling month after month and year after year, to add to accumulations which already represented a round sum. This constituted the whole family. There were no little ones at home, no invalids or aged to be cared for, and the earnings of the parents would have been ample to have educated those two children and opened to them the advantages of the acquisition of a trade or the possession of a farm. Such cases as this are not by any means rare. We venture to say that there is not a mill in the state where child-labor is employed to any great extent, that there will not be found some such. Oldened by toil, while young in years, the lamp of their youth goes out almost before they become conscious of its

flame. Year by year, they add their increase to the aggregate voting population of the state, and wield with the ballot the same power as does the most intelligent citizen. Each will in due season marry his like and reproduce himself four-fold, so that for every male and for every female of this class that obtains a lodgment in life as the head of a family, we shall have in the next generation two.

There are others also who make unjustifiable use of the plea of poverty. In one of the cities where a half-time school exists, in which the children are nearly all of one nationality, it was the testimony of the mill agent that the fathers, as soon as they had children whose united earnings would support the family, were wont to give over all personal effort, and spend their time in idly smoking their pipes in the sun, in summer, and about the kitchen or saloon stove, in winter. This was claimed to be true of the majority of fathers of children of this nationality in this mill. Among them a rapidly growing family is not reckoned as a burden, but is looked upon as the happy harbinger of days of restful ease and fumous comfort.

If we compel capital to provide schools, we are unjust to it, if we give it not an educated laborer in return. We subject property to taxation for education, and to the extent that we fail in diffusing it, we leave property to the mercy of unregulated passions. The capitalist, in the payment of his educational tax, concedes the benefit that he derives from having skilled laborers in his employment, and cultivated communities about him. He knows that his work is more efficiently done and his property more secure. We owe it to him, then, as well as to the laboring masses, that *every child* in the state should receive some benefit from the money drawn from his coffers.

According to the thirty-sixth report of the board of education, the total amount of money expended in the state for public-school purposes, for the year 1871-72, was \$3,633,-648.89. This money was raised on the basis of the number of children in the state between the ages of five and fifteen, viz., 282,485. But by the same report we find that only 205,252 children, on the average, were in attendance. In other words, twenty-seven per cent were constantly absent

and receiving no benefit from the \$981,085.20, raised by local and general taxation for their use.

We find by the same report* that "in Lynn, 1,665 children, in violation of statute law, are left to toil in our workshops, or waste their time in trifling pursuits."

And the same report says,† respecting truancy, in Cambridge, "from the most reliable information at hand regarding the school population of the city, it seems that there are, on an average, more than two thousand children, between five and fifteen years of age, who are daily absent from the schools."

By reference to another division of this part of our report, it will be seen that in Prussia the attendance is between ninety-six and one hundred per cent of the whole number of children, and in some cantons of Switzerland about the same.

When we compare ourselves with that republic of the old world, Switzerland, or that kingdom which we are wont to consider as founded on cannon rather than universal education, and as ruled over by Krupp and Bismarck, we find nothing in respect to the general diffusion of education on which we can congratulate ourselves, but, on the contrary, much which we must deplore.

President McCosh, of Princeton College, says:‡ "All Americans feel that if their republican institutions are to continue and to prosper, they must have an education as universal as the suffrage. But in gratifying their national sin of self-adulation they must not allow themselves to forget that other nations are making rapid progress, and if the states are to keep before them, or even to keep up to them, they must be anxiously looking round for suggestions, and ready to adopt improvements from all quarters."

Rev. James Frazer, a member of the schools' inquiry commission of England, visited this country in 1865, and spent six months in examining our public-school system. His report was made to the British government, in the following year, and is published in a large octavo volume of 435 closely-printed pages.

As the testimony of a very competent observer who looks on us from without, we give some of his conclusions.

* Page 81.

† Page 121.

‡ International Review, March, 1874.

There is throughout the volume so much evidence of a thorough appreciation of everything good in American schools and American institutions, and so much generous and hearty praise bestowed where praise was conceived fit, that the criticisms which he makes should be seriously considered.

Mr. Frazer says : * " An interesting problem is the future of this grand system of schools. To me, gathering together and reflecting upon the phenomena which I observed, this future seems a little uncertain. I do not mean that the system is breaking down, or likely to break down, or that I could trace in it any symptoms of decrepitude or decay. And yet I judge, from the passionate advocacy of its supporters, and the earnestness with which, in report upon report of its progress, its claims upon all true patriots are urged, that some misgiving is felt as to the firmness of its position, and I could myself discern the operation of some not inconsiderable influences that have a tendency to undermine it. The clouds, as yet, may be no larger than a man's hand, mere specks at different edges of the horizon ; but they are rising, and if they mass themselves together there may come a storm. The influences I speak of are chiefly these : I have already illustrated each of them abundantly in the course of this report, and all I shall do here will be simply to enumerate them.

" First : I set down the apathy of the large classes of society, the highest and lowest, who do not use the system, or only partially use it, and are too short-sighted to see how they are benefited by it.

" Second : The inadequate appreciation of its benefits even by those who do use it, as shown by the indifference of parents, the prevalence of the notion that ' the cheapest teacher is the best,' the complaints that the education offered is not suited to the after-life of the scholar, etc.

" Third : The admitted increase, in spite of all the seeming attractions of the system, of the twin evils, absenteeism and truancy. * * *

" And, eighth and last, the growth of wealth creating a plusiocracy, if not an aristocracy, to whom the idea of ' common schools ' will be as distasteful as all levelling ideas ordinarily are.

* Frazer's Report, p. 201, et seq.

"Of all these influences I could perceive traces, more or less distinct, in the general current of public opinion in America; nor is it an extravagant, nor even an unkind anticipation, which apprehends that even the essential principles of the system, if not absolutely endangered, at any rate are likely to be seriously affected by them. I confess to a doubt whether, in the course of another quarter of a century, all will go as smoothly with the common schools of America, as it has gone for the last twenty-five years; whether, like many another ancient institution, they may not be put upon their trial, and even forced to yield to the restless reconstructing tendencies of the age.

"There are two great difficulties in the way of our adopting a common-school system in England. In America, as we have seen, such a system is based upon a theory of social equality, which seems to suppose not only an equality of rights but an equality of conditions, and a theory of religious freedom which fancies itself obliged, as by a necessary corollary, to exclude religious teaching. In England there are both sharper lines of class distinction and sharper tones of class feeling. The system, as remarked, is more suitable to a community where wealth, the great modern creator of social differences, is equably than where it is unequally distributed. * * *

"Even in America the system, with all its efficiency, labors under almost every one of the difficulties that beset the question of national education at home. Its benefits are unequally diffused; the richest neighborhoods get most of them, the poorest least. Local managers are found frequently to be under the influence of narrow and illiberal views. Teachers are both inadequately remunerated and imperfectly qualified. In the cities there are great masses of untaught; everywhere attendance is irregular, and the labor market competes, and triumphs in the competition, with the school."

That there is a growing tendency on the part of the wealthy, to educate their children in private schools, can hardly be doubted, and that the influence of their withdrawal is deleterious to our public schools no one can deny. But this is an evil which can only be counteracted by an increase of efficiency on the part of the public schools, and by

a more universal application of their advantages to the poor. It is unfortunate as regards the future of our common schools; that the wealthy are so short-sighted as not to see that their own children are likely to get as much good from association with the children of the poor as they give.

The tendency in a society exclusively rich, is to a development of refinement at the expense of strength. The boy or girl who witnesses the daily struggle of classmates who come from the forlornest homes of a great city, who mingles with them in the sports of the play-ground, and finds himself or herself sometimes forced to yield to them in competitive examinations, will attain a respect for their virtues and a charity for their failings that will be of inestimable value in the development of their own characters. The association, as regards wealth, of the children of all classes in our common schools, is almost as important in the perpetuation of a republican form of government, as the existence of the schools themselves.

There is yet another aspect in which we should look at the subject of education, and that is in relation to its effect on the abatement of child-labor and the consequent results to future generations.

If children are put to school, they will be relieved from labor; and at this point we cannot resist the temptation to introduce the words of Michael Thomas Sadler, a distinguished Irishman and member of parliament, who rendered efficient aid in the passage of the bill of 1833, regulating the labor of children in textile factories.

Mr. Sadler said:—"The morning of life, which God and nature intended as a time of mirth and pleasure, is made that of imprisoning, unhealthful, and demoralizing labor; and our political philanthropists wished to extend this system, instead of encouraging cultivation; though, no doubt, their feelings would be severely shocked at seeing such treatment transferred to the brute creation; as, for instance, were the farmer, providing himself with gearing and implements for the purpose, daily to labor a yearling foal at the plough; aye, and nightly, if it suited his interests. Cruelty like this to animals would excite universal sympathy and abhorrence, and probably travel the nation in ten thousand paragraphs; it is thus

our delicate susceptibilities find vent! It is rather a melancholy task to trace the progress of the new system; to anticipate the ultimate consequence, if every other interest among us must give way to it, is most appalling. In the times of ignorance, 'man went forth to his work in the morning'; he was the laborer of the family, and it sufficed: but now his infant children are demanded to make up his necessary means of subsistence, and too often become, not his assistants, but his rivals, in the market of labor, to use the phrase of the times; so that himself is often now found there 'all the day idle, because no man hath hired him,' when the fashionable system of policy coolly recommends his desertion."

We presume there are many who think that children should labor as well as men and women. The Massachusetts farmer does not reckon himself as very wise because he knows better than to work his calves or his colts. It would be supererogatory to bring arguments to him to prove that he would injure their future usefulness, by putting them to labor before they had reached a decent maturity. But, at the same time, he does not scruple to do this in respect to his children, and often gets a fair man's work out of his boy of fourteen. Let him consider whether he is not kinder to his stock than to his growing son, and take heed of his kin as well as his kine. In every family there are chores and errands, which the children are called on to perform, which make in themselves a sufficient amount of labor to afford some discipline and develop responsibility. Any labor beyond the amount necessary for these purposes is unfit for children. Let any man or woman perform the chores and do the errands that they call for daily from their children, and they will be likely to find out that chores and errands are but other names for work.

But it is not so much of the lighter kinds of regular labor that we complain, as those that are heavier, or long-continued, or pursued in unhealthful atmospheres.

It is impossible to overlook the physical degeneracy which must result where young children, with growing bodies, are put to continuous labor in ill-ventilated rooms, or in rooms where the temperature is 80° or 90°, as is the case in many

rooms in woollen and cotton factories; worse, perhaps, yet, is the result to them in flax and jute mills, from the fine particles of disintegrated fibre which fill the air and are taken into the lungs with every inhalation.

The consideration of these and kindred facts as regards child-labor is disdained by many as an indulgence in a sentimentalism that, going to the other extreme of complete remittance from labor among children, is likely, in another way, they think, to inflict as great an injury upon the child, as does the present state of things.

In this country, where people are to so great an extent the architects of their own fortunes, we have the examples of many who have risen to wealth and honor, who had spent half their life before their majority in daily contest with toil fit only for men. They knew, meantime, as others cannot know who have not felt, the gnawings of unsatisfied stomachs and the shiverings of half-clothed limbs; but, surviving all, they worked their way gradually to position and competence, to usefulness, good citizenship and some degree of culture.

It is manifestly unfair that these strong and healthful stocks, endowed by nature with an unusual vitality, should be accepted as exponents of a system of stirpiculture generally applicable.

If we would follow nature's cruel plan, in which only the survival of the fittest seems to be provided for, we could do no less than endorse it. Nature, working under this law, amidst the vast solitudes of mountains and plains, and wherever man is not, secures the survival of that which is really fittest; but when man enters her domain with the implements of husbandry in his hands, a new law is introduced, demanding that something else than vital strength shall be the test of fitness for life. The fittest for man's purposes is not always the strongest. Luscious fruits hang from trees in our orchards that would never have won, unaided, a healthful and useful maturity; and beautiful flowers blossom in our gardens, that were produced by a tender nursing and protection from nature's exuberant powers. It is not unnatural that men who have conquered the adverse

forces of poverty and illiteracy, which beset them in youth, and secured an honorable position in the world, should consider that hardship is a good thing for the young, and an imperfect education a preservative from weakly sentimentalism. But they should more carefully reflect whether the trials which were an incentive to them might not be fatal to others. These men represent vital strength and are bound to survive and thrive, whatever the age or country that gives them birth, and whatever the circumstances of that birth.

Civilization comes, and demands and begins to provide for, the survival, likewise, of other men with other gifts. It introduces a new standard of value and recognizes other qualities, moral or mental, often not found associated in the same individual with vitality, as being of parallel or paramount importance in its work of subjugating barbarism. It is not unlikely that the severe regimen to which poverty subjects the youth of many, serves oftentimes as a healthful stimulus in the hardening of convictions and the consequent development of character. But this heroic treatment is fit only for strong natures; and where one man is raised by it, ten are destroyed and lost for all the purposes of a high civilization. It is answer enough to the cry of weak sentimentalism, on the part of these men, to ask if they put their own eight and ten year old children into factories, at daylight, to work ten hours, in unwholesome and ill-ventilated rooms. We think it is the general opinion that they are the very parents who require the fewest and the least onerous duties from their children, and who are the most remiss in enforcing constancy and regularity in their school attendance.

Another question which seems to arise naturally, at this point, in considering the question of children's labor, is the question of its reward or wage.

There seems, within recent times, to have occurred a change in the relation of wages to support, so that more and more the labor of the whole family becomes necessary to the support of the family. If we are right in our surmises, that this is becoming more fixed and recognized, from decade to decade, it certainly bodes no good to our future. The civilization of the nineteenth century, which seems to

especially emphasize the home as its one most prominent and valuable feature, should not allow it to become necessary that any but the husband and father should labor for its support and security.

It is likely that if, by compulsion, the children of the state are taken from work and put into school, there will be individual cases of suffering and hardship, but these will be only temporary. The rates of wages, after a little time, will readjust themselves to the new state of things; and the same amount of money, or a somewhat near approximation to it, will be earned by the head of the family, as is now earned by him in conjunction with his children.

To illustrate this a little more fully, we may suppose that, at a certain time, in a certain community, a condition of affairs obtains such as insures that the labor of the husband shall be sufficient for the maintenance of the family; the wife cares for the household; the children are under preparation for the duties and privileges of man and womanhood. The manufacturer, all at once, is struck with what we may suppose to be a new idea. He discovers that he may lessen the cost of production, and thereby undersell and out-sell his rivals in the trade, by employing young people of, we will say, sixteen years of age. He sees that they will be as efficient auxiliaries to his machines, for three-fourths of his work, as men. He can hire them for a dollar a day, while he is obliged to pay men two dollars. Animated with this idea, he promptly reduces it to practice.

But the secret of this low cost of production can not be kept. His competitors learn of it and imitate it. It spreads in all directions. Large numbers of men are thrown out of employment. Yet they must have subsistence; so they say to the manufacturer, if you can not give two dollars a day, give me a dollar and a half; there are some parts of your work for which I am more competent than a young fellow of sixteen. I think I should be worth to you for that work a half dollar more than he. So a portion of the men are still retained, and are comforted for the decrease in their earnings by the reflection that the wages of their children make up the loss.

But competition is not content even now; it is discovered

by some enterprising manufacturer that children of ten and twelve can do many parts of his work as well as men did them once, or as young people of sixteen do now. So a certain number of the latter are displaced, and children, whom he can hire for fifty cents a day, substituted. Indirectly this operates to displace some adults also; and they and the youth find that those of them who can have employment at all, must be content with less wages; so a dollar and a quarter, and seventy-five cents, is offered to each respectively, and by each accepted.

This seems to us a fair statement of the manner in which the introduction of child-labor tends to the decrease of men's wages, and the relegation of large numbers of them, for portions of the year, to idleness.

Superficial thinkers have criticized the manufacturer severely for this state of things; but the manufacturer of to-day who is blamed for it, was yesterday, perhaps, the laborer who denounced it. They should rather find fault with human nature. And it is in this shape, as pertaining quite universally to human nature, that it is to be dealt with. It is for legislation to regulate human nature. An immediate change, as we have said, might result in individual cases of hardship; but it is not necessary that the change should be immediate. Analogy would seem to point to a gradual recovery of what we may not improperly call man's normal position. That the present is a condition of things which should not exist, and which cannot exist for any great length of time without the health of the body-politic suffering, we think all thoughtful men will admit. It is obviously a condition of as great detriment to the employer as to the employed, for the temporary gain which accrues to his pocket will be subjected to heavy drafts in the future.

In Part IV. of this report will be found much interesting and valuable information bearing on this subject, derived from original investigation.

In 1802, England took her first step as to the regulation of child-labor and the education of child-laborers. Every movement since then has been in the direction of a lessening of their labor and an expansion of their educational opportunities.

The same drift is apparent in every European country. There is no doubt but half-time schools have been of great value in England. In one sense they would be of value to us. They do there, and they would here, no doubt, furnish large numbers of children, who might otherwise grow up completely illiterate, with some rudimentary knowledge of books; but there is one other thing which they accomplish there which totally unfits them for our use. They help to perpetuate the class distinctions which England conceives necessary to the stability of her existence. They would serve here, and quickly, to introduce the same distinctions. The homogeneousness of society is of the highest importance to us; and a somewhat more general diffusion of elementary knowledge would not by any means make amends to us for its loss. As long as Massachusetts objects to other states establishing schools to which *color* is the sesame of entrance, she can hardly deny that she is likely to become, in turn, a fair subject of criticism, if she shall establish schools to which *occupation* is the criterion of admission. Class schools are class schools just the same when they are for those of a certain employment as when they are for those of a certain color.

With factory schools once in full blast, how long will it be before the tradesman's or the lawyer's child will look upon their ill-clothed and dirty-handed pupils as inferiors and aliens. You can see it already in places where these schools exist in Massachusetts. And will not the factory child in turn view himself in the light of one degraded? Will the little book-learning he acquires bring him up, as much as this banishment from opportunities of social culture will sink him?

Most assuredly it will not. The book-education which the children of poor parents get in our present public schools is but a tithe of all their gettings. The cultivation of the moral and social natures from association with those blessed with a better home-training; the opportunities of self-comparison with them, and for the formation of friendships on a basis the nearest to perfect equality which the world has ever seen; the stimulus to exertion for such, in all ways, toward perfect man-

and womanhood which exists in these schools, in the knowledge that if they but zealously continue in them and honorably graduate, there will be no shred of the badge of their uncultured origin remaining, and no barrier left to their future advancement, but poverty, the implements for whose destruction they will hold in their hands; the very surroundings of costly desks, instruments of music and pictured walls (for these do not now, nor will not exist, in any such sumptuousness for the factory child in his school),—all these, and many more, are the choice acquisitions which the child of humble parents obtains in our public schools. These are the things which cultivate him. Education which has no smack of culture about it is but an effort of the memory and of little worth. It is like the verses which we learn in private to adorn our public discourse; they are conned only to affect others, and never seem to re-act upon ourselves, while the lines that spring to our lips at the apposite moment, have been taken into the inmost recesses of our beings, and lie next our hearts.

The establishment of half-time schools in England was an advance, but for Massachusetts we believe it would be a retrogression.

It is claimed by their supporters that the children who frequent them, advance as rapidly in their studies as those who frequent full-time schools.

We cannot believe this to be true; but if it be true, then, we should say, let it be made true for all. Let our full-time schools be closed, and half-time schools be opened sufficient for all the children in the state. Let us aim to be both consistent and democratic. But the measure of evidence that can be adduced to support this assertion is extremely small; too small, we think, to need more than this passing mention.

We believe that it is the business of children to attend school and acquire an education, and that they should have no legal status as workers. If it be said that the world has not arrived at that stage of development when it is incumbent on us to see that the child of the poorest and most degraded parentage should be compelled to attend school, and the wealthy be compelled to furnish and support them; we

reply then, that a grave mistake was made when New England originated her present free-school system. For it was founded on that basis, and all our legislation has tended to that end, but hitherto always falling short of accomplishment, until now the alternative is offered us, of justifying previous laws, of adding the key-stone to the otherwise perfect arch, or of starting again on a basis honored only in the example of certain monarchical countries, a basis which, beginning with the school, is sure to end in society, and which will exhibit us, sooner or later, with social gradations as systematically arranged as any which now curse European countries.

We believe it is especially necessary for the perpetuity of our form of government that there should be universal intelligence among our citizens, and to have that we must first have universal education; and not only universal education, but there must be a certain homogeneousness about it. The education of the poor man must not be of a kind to specially fit him for associating with poor men, and remaining a poor man, becoming a barrier to oppose his progress except in one particular direction, and on one particular level; nor on the other hand must it happen that the education of the rich shall be of a distinct kind and quality to insure that they will be kept rigidly through life in certain grooves. And to prevent these two things, nothing more efficient can be provided than the heterogeneous association of all classes, as regards wealth and social position, in the common schools. There was undoubtedly a great deal of force in that word "common" in the minds of our forefathers.

We see no way to attain this universal education except by making it compulsory. Our right to do this is established by many precedents, and supported by reason and justice. On this latter point it is enough to say, that if we can compulsorily take taxes from property for the support of schools, we can with equal right compulsorily take the children to fill them; indeed we shall hardly be fair to property unless we do.

Plato, in his Laws,* says that masters should be provided
 "to teach every one, * * * not only the youth

* Book VII.

who comes to school because his father wishes it, but him, too, who, because (his father) does not (wish), neglects his education, * * * * since they belong rather to the state than their parents."

So we have been led through much investigation and reflection to a far higher veneration of the idea embodied in those two words, "Common Schools." It seems to us that our fathers builded so well when they laid the foundations, that it becomes an imperative duty for us to erect our superstructure on those foundations.

Feeling thus, we cannot witness with sympathy the establishment among us of what are called half-time schools. And we perceive with regret, a popular tendency in the direction of this system. To our minds it is a system which is but a makeshift, and a dangerous and deluding makeshift, which "keeps the word of promise to the ear, but breaks it to the hope." Its specious appearance of merit and acceptableness has produced, in the minds of many, very favorable opinions of its usefulness; but we trust that in so important a matter as the elementary training of the young, haste to cure a great evil may not lead to the adoption of any empirical means.

In the statements which follow we have summarized our chief points of belief in the whole matter, and our reasons therefor; and the recommendations annexed we believe to be expedient as well as wise; and that they will tend to lay a *permanent* foundation for our future welfare.

We believe that, generally speaking, the period of childhood and youth should be a period of free and unrestricted physical growth, that the bodily man and womanhood may be vigorous and vital. We believe that this is peculiarly essential in this country, where life is so intense, and so many accomplishments are crowded into every year of adult life.

We believe, also, that the period of childhood and youth should be a period of mental and moral discipline and education, that the adult may not have to contend blindly and at great disadvantage with the forces of nature, and be subject constantly to the depredations of his fellow-men.

We believe, in short, that children should have no legal

status as workers, but only as pupils; and, above all, that the poverty of parents should not be allowed to foster the one condition or frustrate the other, inasmuch as it is unwise for the state to permit the future usefulness of its citizens to be jeopardized by causes within its control.

We believe that the opportunities for education should be the same for *all* the children in the state; and that a special and necessarily poorer class of schools should not be established for the children of the poor. We believe this, because it would be a direct blow at the democratic foundations on which our governmental structure rests.

And in answer to the resolve of the legislature, we would recommend that our laws be so revised as to provide compulsorily for the attendance of all children between the ages of five and fifteen (not in attendance upon any private school) in the public schools for as long a time each year as they are kept in operation. And for the general accomplishment of this, that the state or local authorities be required to investigate and relieve, to such extent as is necessary, all cases of absolute and unavoidable individual poverty, which would otherwise prevent compliance with this obligation.

We present below the outline of a bill which we would offer as our conception of the proper "plan" to be adopted.

If any consider it impracticable, we have only to say that it does not go as far as the laws of some European countries, and seems to us absolutely necessary, if we expect to bring Massachusetts up to the same plane of nearly universal education which they occupy.

SECT. 1. On and after the first day of September next, no child under the age of twelve years, shall be employed in any factory, workshop, or establishment where the manufacture or sale of any species of goods whatsoever is carried on; and after the first day of September, eighteen hundred and seventy-six, no child under the age of thirteen years shall be so employed; and after the first day of September, eighteen hundred and seventy-seven, no child under the age of fourteen years shall be so employed; and after the first day of September, eighteen hundred and seventy-eight, no child

under the age of fifteen years shall be so employed : *provided*, that children of the age of twelve years, and under the age of fifteen years, may be employed until the first day of September, eighteen hundred and seventy-eight, during such times as the schools of their respective towns or cities are not in operation, or for a certain portion of each year, until the aforesaid first day of September, eighteen hundred and seventy-eight, as permitted in the following section.

SECT. 2. No child of the age of twelve years, or who has not reached the age of fifteen years, shall be employed in any factory, workshop or establishment, where the manufacture or sale of any species of goods whatsoever is carried on, unless, within the twelve months immediately preceding the beginning of such employment, and during each succeeding period of twelve months of such employment, such child shall have attended the public day schools of the town or city wherein his parents or guardians reside, for at least twenty weeks of five days in a week, which time may be divided into two terms, each of ten consecutive weeks, so far as the arrangements of school terms will allow, or for forty weeks of five half-days in a week so divided : *provided*, that attendance for the same number of days or half-days, consecutively, upon any private school approved by the school board, shall be considered an equivalent; and no manufacturer, merchant or other employer shall employ any child unless such child shall have presented a certificate, signed by the superintendent of schools or by the school board, certifying that such child has complied with the requirements of this act.

This section shall be construed to render permissible the employment of children of the ages named, only until September first, eighteen hundred and seventy-eight, and shall be null and void on and after that date.

SECT. 3. It shall be the duty of the truant officers, in all cases where poverty apparently prevents the attendance at school of any child, to report the same, within ten days after the beginning of each term, to the overseers of the poor, who shall, within ten days thereafter, if, on investigation, a sufficient degree of poverty be clearly apparent, provide, at the expense of the town or city, relief from such poverty to the extent necessary to secure the attendance of such child at school.

All truant officers and boards of overseers of the poor who fail to comply with this section shall be subject to a fine of not more than dollars, and not less than dollars, in the case of each

child ; and every manufacturer, merchant or employer, who employs any child contrary to the provisions of this act, and every parent or guardian who permits such employment, shall be subject to a fine of not more than dollars, and not less than dollars, in the case of each child. Justices of police or district courts, trial justices, trial justices of juvenile offenders and judges of probate shall have jurisdiction within their respective counties of the offences described in this act.

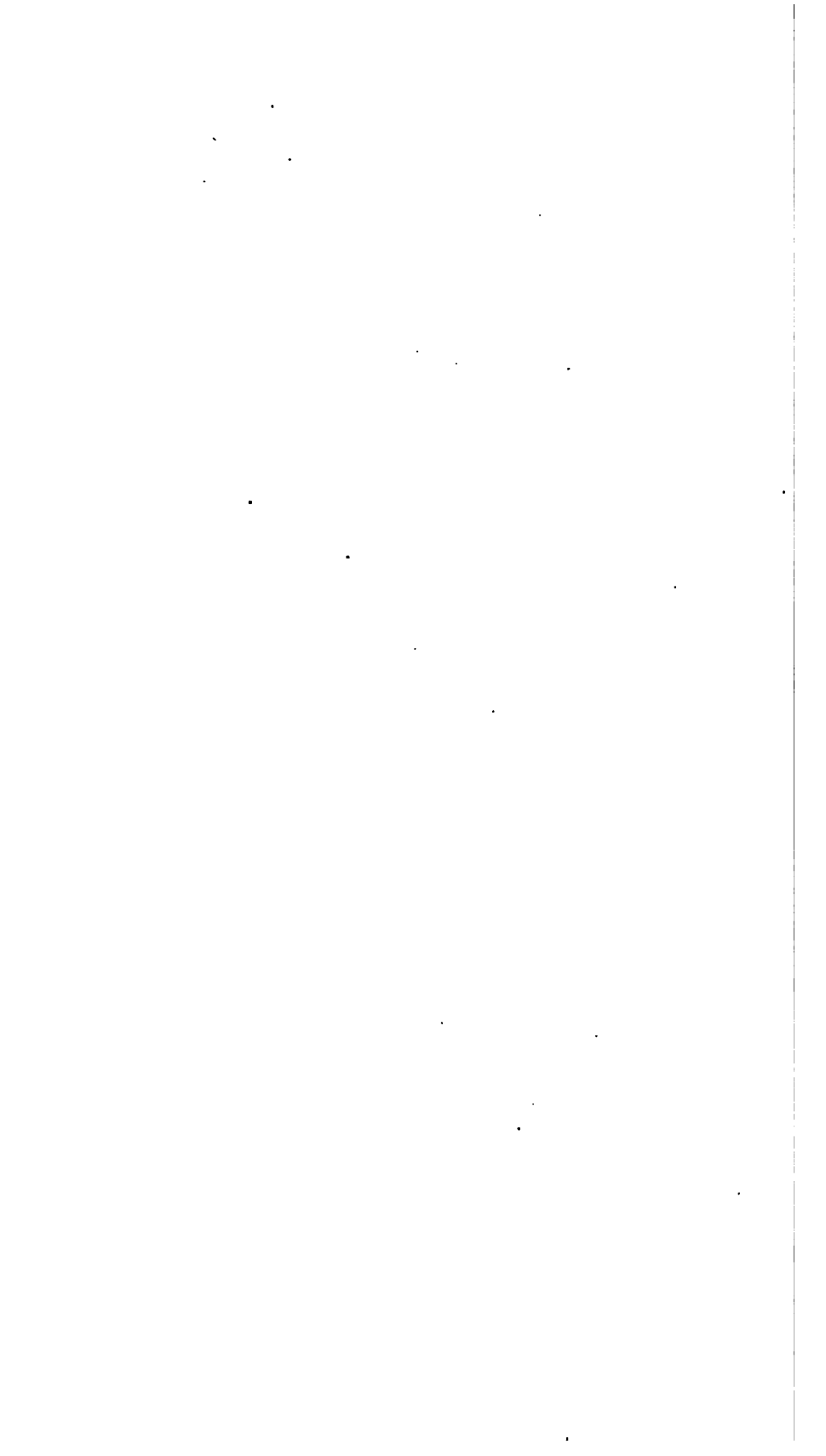
SECT. 4. All fines collected under this act shall accrue to the benefit of the school fund of the town or city.

PART II.

SPECIAL EFFECTS

OF

CERTAIN FORMS OF EMPLOYMENT UPON
FEMALE HEALTH.



PART II.

SPECIAL EFFECTS OF CERTAIN FORMS OF EMPLOYMENT UPON FEMALE HEALTH.

Continuing the investigation of the sanitary condition of the working-classes instituted by the bureau last year, efforts have this year been made to obtain particular knowledge of certain industrial influences and conditions, some of which were of assured vital importance, while others, presumed so, called for the collation of authentic data to define their real character. Recognizing the position of woman as a chief factor in all political and social problems, and the necessity to their happiest solution, of her most healthful *status*, especial regard has been had to the consideration of employments, which, from their character, might be presumed to affect deleteriously the female operative, and more especially the establishment and normal course of her peculiar sexual functions. Strange as it appears, widely and ably conducted as the investigations of various governments have been, into the processes and influences bearing unfavorably upon the health of working-people, with frequent special attention to their results upon child bearing and nursing women, and (in a general way) upon children of tender years, there seems to have been no effort made by authority, until that of the bureau last year, to determine the far more important, the *cardinal* relation which labor bears to this essential attribute of the forming woman, on which so certainly hinge all other vital results. It is curious, in this connection, to note, in the otherwise admirable report of Messrs. Bridges and Holmes, made last year to the British Local Government Board, "on proposed changes in the hours and ages of employment in

textile factories," that there is hardly more than a hint in the following questions, put by these gentlemen to the medical practitioners of factory districts, of any possibility of injury to the young and maturing female operatives, in this most important direction :—

"1. Have you had experience of factory operatives; if so, how long?"

"2. Have you formed any opinion whether the factory labor, as now carried on in your district, has any deleterious influence on the health of the operatives? Are there any diseases which you have noticed as being peculiarly prevalent amongst them?"

"3. Are there any processes in the manufactures of your district which you believe to be specially injurious to women or children; and, if so, in what way?"

"4. Has the labor any tendency to increase the rate of infant mortality? If so, does this depend on the mothers suckling their children imperfectly, or on their working too near their confinement? Do you know how soon married women usually work at the mill before and after delivery?"

"5. Do you think that 'short-timers' commence work at too early an age, or that their hours of work are too long?"

"6. Do you think the present age of thirteen years too early for a child to commence working 'full time'?"

"7. Do you think that the present day's work, ten and a half hours, is too long for young persons or for grown-up women?"

With a careful and highly commendable search for causes of maternal injury and infant mortality, there is here, as elsewhere, manifest a singular neglect of direct and inquisitive attention to the dangers to the *basis* conditions on which healthful maternity and infant life *depend*, and which, moreover, are incident to every one of the sex.

The field of inquiry as to the effect of over-*mental* exertion on the special function of the sex, so vigorously opened by Prof. Clarke, has found many laborers and an abundant harvest, and we trust that this complementary field of study of the relationship of *physical* over-burden and sexual disturbance, may find a general recognition, as generous as that given the work of the bureau in this direction last year, in the new monograph of Prof. Clarke.*

* "Building a Brain." J. R. Osgood & Co.

In addition to the particular attention given this phase of non-sanitary influence as affecting the working-classes, other agencies bearing upon the general health of working-people have received consideration, and the results thereof are herewith presented.

Influences that Affect the Proper Establishment and Normal Course of the Peculiar Functions of Female Working-People.

The influences that inhere in special processes or forms of employment, and operate injuriously upon the menstrual function of young females engaged therein, are deserving of, and demand, special attention, not less by the gravity than the extent of their effects.

A process or condition of employ that tends to the prevention or impairment of the normal course of this vital principle in woman, involves economic, sanitary and moral questions of the farthest reach; for, whenever successful in its aggressions, it brings,—

1st. *To individuals suffering thereby,—*

- (a) Lessened productive labor, and hence lessened comforts of life.
- (b) Increased expense, and loss of vital force, time and money.
- (c) A draft upon previous accumulations, or debt and obligation.
- (d) As a rule, lessened capacity for future production by labor.
- (e) Bodily and mental distress, sometimes tending to intemperance and crime. Thus far all results that may be the legacies of several forms of disease, but *specially* resultant on the disturbances in review, while further we have,
- (f) Lessened probabilities of maternity or vigorous offspring, with possible resultant loss of social and domestic happiness, and even a worse train of *sequelæ*, including secondary disease and death.

2d. *To society it brings,—*

- (a) Greater burdens, inasmuch as it lays on its members extra care and labor,—in the strict sense unremunerative.
- (b) Lessened production, present and prospective:
 - 1. By the loss of as much as the disabled laborer would have produced.
 - 2. By the loss of the natural increase of that which would have been produced.
 - 3. By the loss of the production of those required to care for the sick, and its natural increase.
 - 4. By the incapacity to bear a proportionate part by maternity in keeping good the strength of the land, or by the expense, loss and burden involved in the production of non-vigorous and non-productive offspring.
- (c) Loss to the general tone and work of society.

It hardly seems credible, at first thought, that the class through whom such an aggregate of loss may be, and really is, inflicted upon the state, is composed of the young girls, between the ages of eleven and twenty-one, engaged in our industrial pursuits, by which their injury is effected. The mortality tables of our cities and manufacturing towns hint at the facts, but rarely include this class under such "causes." Our hospital wards do not often receive them, until special agencies of disease have become secondary or general, but their out-patient rooms and the "dispensaries" are familiar to them, and the "corporation" physician and general practitioner is acquainted with their troubles. Profuse, difficult, deficient or retarded menstruation, anæmia, chlorosis, anasarca and œdema of feet, pains of back and limbs, nervous headaches, hacking coughs, by-and-by tubercular symptoms, and more or less early decline, is the usual list and order of complaints that our errors of industrial employ are establishing with this portion of our working world, and with their results are grafting upon our nationality to its steadily progressive decline and decay.

In the report before quoted,* Messrs. Bridges and Holmes declare, that: "Amongst the women of factory operatives, much more than among the general population, derangements of the digestive organs are common, *e. g.*, pyrosis, constipation, vertigo, and headache, generated by neglect of the calls of nature through the early hours of work, the short intervals at meals, the eating and drinking of easily prepared foods, as bread, tea and coffee, and the neglect of meat and fresh-cooked vegetables. *Other deranged states of a still worse character are present, e. g., leucorrhœa, and too frequent and profuse menstruation.* Cases also of displacement, flexions, and versions of the uterus, arising from the constant standing, and the increased heat of and confinement in the mill."

What, then, are the errors of employ that entail upon the individual, and the community alike, these serious results. We assume that:

First. Is the age at which we permit the young girl to leave a life of animal growth and become a part of an occupation or machine.

Second. Is the disregard (even in defiance of statute) which our managers of industries exhibit for the cardinal principles of continued prosperity and individual happiness, in the regular and prolonged employ of the plastic and undeveloped forms and powers of these girls of tender years, whose vital functions are as yet incomplete.

Third. Is their employment in occupations which can not be undertaken without injury, except by those confirmed in the possession of full strength and capacity.

Fourth. Is in summoning these girls to a long day of labor and requiring their unremitting attention to it, under conditions and circumstances radically unfavorable to health. An analysis of this grouping of causative errors will show, under each division, a demand for the simultaneous exercise of very considerable, often *intense*, activity of bodily and mental forces, and it is believed that just in proportion as these forces are co-ordinated in occupations and maintained in extreme activity, the impairment and overthrow of the peculiar function of the sex will result. Upon that impair-

* Rep. on Proposed Changes in Homes and Ages of Employment in Textile Factories.

ment and overthrow we desire to fix the observation of all as a prime factor, in determining the decline and mortality of young female life and the multiplied loss consequent thereon. Says Mr. Simon,* medical officer of the Privy Council of Great Britain: "The death rates of the young are, in my opinion, among the most important studies in sanitary science. In the first place, their tender young lives, as compared with the more hardened and acclimatized lives of the adult population, furnish a very sensitive test of sanitary circumstances; * * * and, secondly, those places where they are most apt to die are, necessarily, the places where survivors are most sickly, and where, if they struggle through a scrofulous childhood to realize an abortive puberty, they beget a sicklier brood than themselves, *even less capable of labor*, and even less susceptible of education. It can not be too distinctly recognized, that a *high local mortality of youth must almost necessarily denote a high local prevalence of those causes which determine a degeneration of race.*"

The unmistakable results of inquiring into the effects of co-ordinated mental and physical activity on the menstrual function were briefly recorded in the report of this bureau last year.† A wider investigation has confirmed them, and it is also made certain that the train of evils hereinbefore stated as the *sequelæ* of such functional disturbance are producible in the immature female.

First. By severe overwork alone.

Second. By severe overwork coupled with innutrition and non-hygienic surroundings—more rapidly.

Third. By labor requiring great celerity of manipulation coupled with intense concentration and activity of mental forces—most rapidly, and especially if under poor nutrition and bad sanitary conditions.

Fourth. (Probably.) By the secondary effects of diseases engendered or promoted by non-hygienic conditions of labor, as phthisis (consumption), etc.

These causes, then, are direct and secondary, and as ranged under the four divisions, or "errors," before declared, may be considered *seriatim*. The first of these is—

* Introduction to Greenhow's Rep. to General Board of Health, 1858.

† Sanitary condition of working-classes, p. 46, Report of 1874.

The age at which we permit the young girl to leave a life of animal growth, and become a part of an occupation or machine.

"The establishment of the sexual power at puberty, and its extinction with advancing age, both exert important influence on the constitution. At both of these epochs there is an increased liability to disease; and at the former, a marked increase in the rate of mortality." *

It is evident that to maintain that condition of life which shall best promote the normal establishment and course of a function so beset with danger, and on whose due exercise so much depends, should be a first concern of all who have any interest in the future welfare of the community. It is equally evident that large numbers of the very class by whom, and toward whom, this care should be exercised, are engaged in employments whose demands and conditions are such as to render them the reverse of favorable circumstances for the true balance of health in this regard. Until this faculty shall have been established and confirmed in its completeness, there can be no moral—there should be no legal—right of a parent or guardian to permit, or of an employer to secure, the labor of the immature frame in occupations that in themselves, or their surroundings, are inimical to the due development of the individual. If employed, it should be in pursuits free from tendencies to the repression of the sexual principle and the almost purely animal growth which the early years of life seem intended to expressly accomplish. Labors that demand full measures of strength and activity, physical or mental, must properly seek them in those who have passed this climacteric. Dr. Barnes, in his excellent work,† thus clearly states the relation of influence and condition:—

"Many of the factors which account for primitive amenorrhœa (or absence of menstruation), will also induce secondary or accidental amenorrhœa. Thus, defective nutrition, unhealthy occupations in crowded, ill-ventilated rooms, blood-tainting, from exposure to sewage emanations, want

* Dr. West on Diseases of Women, p. 18.

† Barnes on Diseases of Women.

of exercise in open air, which implies privation of the wholesome influences of the sun, will all prevent the advent of menstruation. It is a matter of observation that girls verging on puberty, sent to boarding-school or into business in large town-establishments, commonly fail to menstruate, whilst the function is often accomplished on the return to free life in the holidays or on return to the country. What is wanted is out-door exercise and less rigorous strain upon the mind and body."

In all factory employments, and indeed in many others of the lighter and more commercial order, the labors and attention of the employé must be incessant as well as arduous; and not infrequently the concentrated thought and action of the individual must supplement and be the essential complement of the motions of the machine which the operative tends. Even in many of the higher grades of labor in which numbers of young work-women are engaged, as type-setting, telegraphing, money-changing, etc., the individual becomes almost or wholly subservient to, and absorbed by, the occupation or process to which she is devoted.

Mr. Robinson, of Dukinfield, in his report to Messrs. Bridges and Holmes,* says:—

"The injurious element in factory labor is the incessant and increased action of machinery, preventing the body having those brief periods of repose which, if left to itself, it instinctively would have. I attribute the difference in healthy vigor between colliers and mechanics on the one hand, and factory-workers on the other, to the constant demand upon muscular and mental activity made by constant action of the swift machinery."

"Though the thing done is so monotonous and uninteresting, any negligence is fatal to the work, and the attention must be unremitting; and this call for unremitting attention is increased by the increased speed of machinery and the constant demand for increased production." †

"The depressing agents upon the physical strength of the operatives are not those which exhaust from the wear and tear of muscular fibre simply, but from loss of nervous

* Op. cit. p. 43.

† Idem.

energy by perpetual excitement, and from long continuance in over-crowded, ill-ventilated rooms."*

Thousands of children, more than half of them girls, are to-day employed in the various industries of this state, undermining, in a great proportion of cases, that physical vigor which alone will serve as a sound basis for the moral, mental and material prosperity of a nation.

We have said that the *second* causative error affecting our growing girls in their employments, is—

The disregard (even in defiance of the statute) which our managers of industries exhibit for the cardinal principles of continued prosperity and individual happiness, in the regular and prolonged employ of the plastic and undeveloped forms and powers of these girls of tender years whose vital functions are as yet incomplete.

By far the greater majority of those who are engaged in the lighter labors of manufacturing and commercial interests in our larger cities and towns have not arrived at the age when the law governing such employment releases them from its control, and yet the provisions of the statute in this regard are in large measure utterly ignored, and every section of the state supports industries in the processes of which the law is daily and with unconcern infringed. Probably the first requirement of the law that "no child under the age of ten years shall be employed in any manufacturing or mechanical establishment within this Commonwealth," is violated with comparative rarity, but its second, and quite as important proviso, that "no child between the ages of ten and fifteen shall be so employed, unless he or she has attended some public or private school, under teachers approved by the school committee of the place in which such school is kept, at least three months during the year next preceding such employment, * * * nor shall such employment continue, unless such child shall attend school at least three months in each and every year," is most wilfully disregarded. "No child under the age of fifteen years shall be employed in any manufacturing establishment more than sixty hours in one week. Any owner, agent, superintendent or overseer of any

* Rep. Sanit. Cond. of Leeds, 1842.

manufacturing or mechanical establishment who shall knowingly employ, or permit to be employed, any child in violation of this law, and any parent or guardian who allows or consents to such employment, shall, for such offence, forfeit the sum of fifty dollars." There can be no doubt that these latter clauses of the law are most frequently and criminally thrust aside. It is gravely to be regretted that our law has not recognized the established distinction now so generally, as properly and necessarily admitted, as required by the difference in sex, whether in mental or physical labor; has not defined with precision in the law itself, what shall be the interpretation of "knowingly employ"; and has not made definite provision for its rigorous enforcement in every city and town in the Commonwealth. Not that we consider the law fully adequate to meet the evils pointed out, but that it would, if rightly enforced, go a long way toward the remedy of those evils. While the original error of the law is in admitting to employ, at all, in such establishments, *girls* of such ages, and, as a rule, boys even, and while the change to school occupations, though an undoubted advantage over the hard grind of the factory or even shop life, is but a stepping from one form of concentrated effort to another, even the provisions that do exist in law would lessen, by much, the existing ills if duly recognized or enforced.

It is the *disregard* manifested for the future physical, mental and moral condition of these important factors in the up-building and work of society, and in their individual belongings, that is so unfortunate a feature of the methods of managers; for while want presses and the "wolf is at the door," present needs will have little thought of future results, and those who employ, or the law-making and enforcing power, must be at such time the governing mind. At the rattan factory at Wakefield, at the flax-mills in Braintree, and at numerous others that we could mention,—at the former, especially,—there have been employed for years large numbers of girls and boys, "knowingly," who have not reached the age of fifteen years, and have not a day's or an hour's schooling in the year. And this, as we say, "knowingly," and with the consent of parents and guardians. A further grave defect of the existing law is in its exclusiveness. While in certain

regards, as in better ventilation and hygienic conditions generally, the lot of the girls and boys of tender years engaged as "cash" carriers, etc., etc., in our large sales-rooms and similar establishments, is better than that of factory youth, it is one whose special influences upon young girls can but be injurious in grave measure; for, as we have pointed out, it is the *regular and prolonged employ*, engaging bodily and mental activity at tension, through so long periods of time, that draws upon the energies that should be chiefly employed in maturing and up-building the youthful economy. What wonder, that with these energies sapped by the steady drain of exhausting employment, she should realize the assertion of West,* that "the frail child never passes completely into womanhood, but fades and droops in the transition stage, through which she has not the strength to pass."

The *third* of causative errors we have stated to be—

Their employment in occupations which can not be undertaken without injury, except by those confirmed in the possession of full strength and capacity.

The consideration of this error, while it embraces the more youthful class to which we have just referred, brings into the foreground those of more advanced years, who, though in part accomplishing the evolutions designed by nature, are as yet insecure in such attributes, and are hence liable to the added dangers incident to their advance. It is not to be hoped for, in this work-a-day world, that we are to be freed from all employments that will fail (with all the alleviations that may be devised) to be divorced from severe mental and bodily energy; nor is it to be expected, nor is it desirable, that the larger proportion of the class whom we have in consideration—the girls and young women from eleven to twenty-one—should be exempted from some form of industrial occupation. The effort will of necessity be, to establish the right adjustment of forces, all the requirements being considered. The occupations that demand maturity of strength and full possession of functional power for their harmless or least injurious pursuit, are not readily designated, but we are warranted by our investigations in concluding that those employments which

* Op. cit. p. 42.

demand extreme mental activity with celerity of movement, long continued; involving unremitting attention, condensed thought and nervous alertness, cannot long be participated in by those whose powers of life are unconfirmed.

Hence the true "division of labor" will be that which delegates processes or occupations requiring the fullest powers of mind and body continuously, to those whose maturity may bear its burdens with least oppression, distributing to the weaker, "to each according to her several ability," the pursuits which a regard for future weal will not interdict their prosecution of. The true "hours of labor" will be based, so far as sex is concerned, on these considerations, and the true "work of reform" will be such intelligent arrangement of legislation and its enforcement, and such amelioration of the present attendant ills, as can come only from a just and proper comprehension of these God-created demands of sexual peculiarity.

We repeat the assertion of the report of last year, that "the important consideration of the effects of labor upon young girls at peculiar periods of life has escaped attention equally with that of their education at the same periods," and we add the expression of our belief, that no data can be more valuable than that which aids to determine the real effect of labor upon the distinctive function of the female worker, inasmuch as there rests thereon so mighty a burden of result. With the view of determining the facts,—so far as might be done in a limited way, the observations of the bureau have been specially directed to those avenues of industry which might be specially presumed to affect, by the character of their processes, the health of those employed in the direction indicated,—these inquiries have been as follows:—

1. Into the effects of factory employments.
2. Into the effects of type-setting.
3. Into the effects of telegraphy.
4. Into the effects of sewing-machine operation.
5. Into the effects of the counting of money.
6. Into the effects of the manufacture of tobacco.

Minutes of the inquiry into each are hereinafter given in full.

The *fourth* of the causative errors enumerated is—

In summoning these girls to a long day of labor and requiring their unremitting attention to it, under conditions and circumstances radically unfavorable to health.

That the hours of labor are long, that the attention to the work in hand must often be most exacting, and that the attendant conditions in which too many of our forms of labor are prosecuted, are "only evil, and that continually," are perhaps the most earnestly protested and readily patent of any of the claims put forward by the advocates of the improvement in the conditions of working-people.

The postulate* of these advocates in England (the examination of which created the commission composed of Messrs. Bridges and Holmes, before quoted) was, "that ten hours and a half of monotonous, unceasing labor, *even under the most healthy conditions*,† are said to be a longer time than is consistent with the health of young persons between the ages of thirteen and eighteen, and of *women generally, of whatever age*."

To this, the rejoinder of the Employer's Association was, "that their bright and healthy appearance is patent to all. Thousands of women are now earning upward of twenty shillings per week; and those *of mature age, whose employment is suited to their strength*,† supply no evidence that they cannot, with comfort and health, work as long hours as men." Even with the very remarkable proviso embraced in this reply, which we have italicised, it is to be remarked that, by the investigation, the commission was forced to conclusions quite the reverse of the assertion that "their bright and healthy appearance was patent to all," and that, in "such employment" as was seemed to be *thought* "suited to their strength," there was "no evidence that" women "cannot, with comfort and health, work as long as men," though at "mature age."

The unremitting attention demanded by certain lines of labor, and commented on as especially deleterious in its influence, we shall consider, together with the non-hygienic surroundings and conditions in connection with special forms of employ.

* Bridges and Holmes' Report, p. 4.

† Italics ours.

A recapitulative analysis of the four causative errors in the management of labor, which we have assumed to be the chief sources of disturbances peculiar to the working-woman, show that, under the *first* we have—

1. Youth, unequal to the positions occupied in judgment or ability.
2. Impairment of animal growth.
3. A constrained condition, as a complementary part of a machine or process.

Under the *second*—

1. Disregard of ultimate injurious effects on laborers and the community.
2. Unbroken application, without vacations, for long terms.
3. Depressing and disease-inviting demands on immature vitality.

Under the *third*—

1. Employ in unsuitable occupations for the condition and strength existing.

Under the *fourth*—

1. Unduly long hours.
2. Concentration of vital energies, involving extreme nerve-tension.
3. Unfavorable sanitary conditions in surroundings and nature of processes.

It will be observed from this analysis that the various influences under different heads are often exactly identical in their special effects, although arrived at from different initial points, and that each of these special effects is potent in creating the condition under consideration.

We have enumerated four methods whereby the occupations of work-women may and do bring about the menstrual disturbances and the results we have mentioned. Overwork; overwork, with innutrition and non-sanitary associations; labor, conjoining activity of body and mind, and the effects of disease primarily produced by the three foregoing causes.

The last of these unquestionably may stand either in the relation of cause or effect, it being beyond doubt that consumption, which produces oftentimes menstrual overthrow in its toil-broken victim, may be and is itself produced by failure of the function in the forming girl. That one has been the parent of the other, with interchangeable priority, and that both have proceeded from certain evils incident to a life of labor, no observer of the working-women of the land can doubt. "Amenorrhœa (retarded menstruation), especially if attended with chloro-anæmia, is very liable to merge into—to induce—*pulmonary consumption*." * "Not uncommonly," says Dr. Clapton, "phthisis appears to be developed in consequence of *emansio-mensium*; but phthisis in nearly every case stops menstruation." "With suppressed menstruation," says West, "the one great danger to watch against is the supervention of phthisis."

THE MANUFACTURE OF TEXTILE FABRICS.

The manufacture of textile fabrics, considered as an avenue of production of the several causes of ill health already dwelt upon, may be looked upon as including them all, and hence becomes worthy the closest attention, not only as a source of results so unfortunate, but also as being one of exceeding magnitude, extending its deleterious influence to a wider range than any other equally injurious employ.

While, with exceptions, it may be fairly considered, in the average, as not an extremely laborious employ, either in this country or abroad, for the younger portion of the female operatives employed therein, and in some of its processes in particular, there is a degree of toil disproportionate to the condition and capacity of those engaged, while the effects of the unremitting and monotonous character of most of the work, can but stand in a direct causative relation to the disturbances and depressions we have pointed out as especially deplorable. It will further be seen that in this branch of industry in particular, the special influences that operate for the production and aggravation of pulmonary complaints, exist to a degree that obtains in no other. Reviewing the unremitting and monotonous character of factory work, as

* Op. cit.

productive of lessened vigor and vitality, Messrs. Bridges and Holmes * state that, "Light though factory labor, in almost all its departments, unquestionably is, additional leisure of six hours per week would tend to increase the vitality and vigor of the women and children engaged in it. We have already referred more than once to the unremitting and monotonous character of all labor at a machine driven by steam. If the day's work of a housemaid, or even of a char-woman, be closely looked at and compared with that of an ordinary mill-hand in a card-room or spinning-room, it will be seen that the former, though making greater muscular efforts than are ever exacted from the latter, is yet continually changing both her occupation and her posture, and has very frequent intervals of rest. Work at a machine has inevitably a treadmill character about it; each step may be easy, but it must be performed at the exact moment, under pain of consequences. In hand-work and house-work there is a certain freedom of doing or of leaving undone. Mill-work must be done as if by clock-work."

The cotton factory, as well as being the most extensive, is, perhaps, as fair a representative of textile factories as can be given, all conditions considered.

In this department of textile manufactories, it is not probable that purely muscular "overwork," except in very young girls, or in one or two special processes, *e.g.*, "drawing" and "weaving," is a source of any considerable functional injury, ordinarily, but it is interesting to note that when it does become so, it is as a result of the grafting on of a species of mental activity, *viz.*, the excitement and "spurring" involved in the effort of a "piece-worker" to accomplish a certain result and obtain a proportionate wage. Contrary to the opinion expressed by Mr. Chas. Cowley in his report to this bureau, embraced in the report of 1873,† that "it can hardly be said that their ('piece-workers') health is either better or worse than the health of day-workers;" our inquiries the present year, both within the mills and of physicians in factory localities, lead to the conclusion, that the "piece-workers" do suffer, both in general and special disturbances, to a greater degree than "day-workers." Inquiry of a dis-

* Op. cit., p. 60.

† Rep. Bureau Statistics of Labor, 1873, p. 262.

tinguished physician who has enjoyed a large practice in one of the principal cotton-factory cities of the State, and who is noted for his exactness in method and record, brought out the fact, as established by his private and hospital records, that nearly a third more came under his professional observation from the "piece-workers" than the "day-workers." An inquiry after those who had been counted the ablest workers in the mills, through a period of years, and had made largest wages, established the facts that they were "piece-workers," and that most of them had "broken down in health," and had been obliged to abandon the work. Nerved by the ambition to be accounted "a smart girl," and, with the incentive of gain before her, it is easy to understand how the female operative will attempt a degree of effort that is inevitably "a note given on time," to be paid at maturity, at an usurious rate from the vital forces of her economy. "It would seem to be as easy to goad women, as it would be difficult to goad men, into doing the greatest amount of piece-work in a given time. The admiration of their companions, and the approbation of the overlooker, appear to be at least as powerful inducements as the increase of their wages. A woman who can mind four looms without an assistant has attained a certain position, and is an object of attention. 'Hoo's a four-loomer, hoo's like to be wed,' will be commonly remarked of such a one." *

In the special processes alluded to, "drawing" and "weaving," it may well be doubted if a labor which, as in the first, requires "the constant removal of the cans (or boxes), to and from the machines, weighing when full from 16 to 18 lbs. (upward of 900 cans passing through the hands of each female in a day)," is not a species of "overwork" in itself, that so continuously plied, must result in injury. In "weaving" and in "spinning", both, it has been a common mistake to employ girls whose ages could but be associated with sexual insecurity that should of itself class this employment for them, as "overwork."

"Where labor is also prejudicial," says Dr. Baker, † of

* Op. cit., p. 20.

† Report on Leeds, in Reports on Sanitary Condition of Laborers, Population England and Wales, 1842.

Leeds, "there needs not miasm and want of ventilation to accelerate its consequences; and there is no doubt but that atmospheric influences have a preponderating effect on many occupations; *they germinate and ripen the seed which labor has sown.*"

Mr. Cowley bears testimony that "the special diseases incident to factory life, are lung diseases and 'female debility.'" Dr. H. Browne, of Manchester, England, states that "diseases of the digestive and respiratory mucus membranes are not quite *twice* as frequent in the factory workers who attend the infirmary as out-patients, as in the remaining out-patients of all classes and both sexes."

We find that sixty-six per cent of the factory operatives in one of the largest and most representative cotton-factory localities, are females. We also find by the return made to the queries of the State Board of Health of Massachusetts, in 1871,* that the ninety-four replies from cotton-factories, to the question, "How many deaths occurred among those of both sexes employed by you in 1870, of the ages of fifteen to nineteen years (both inclusive), from consumption or other diseases?" reported as occurring in twenty-two factories, sixteen deaths from consumption; and twenty-four from other diseases, a total of forty.

An analysis of the replies received by this Board, shows that while (owing to the inaccessibility of real facts) the average mortality of mill operatives in general, does not in a marked manner, *appear* to differ from that of the community at large, either from consumption or other diseases, the *employés of cotton factories do suffer a disproportionate death-rate.* We have, therefore, the testimony of foreign and our own observations, to the existence of results which we have come to recognize as associated with special causes, more especially over-work *coupled with innutrition and non-sanitary surroundings.*

Notwithstanding the great improvements which the past few years have made in cotton machinery, and the processes of labor in cotton factories, the following comprehensive statement of a German writer,† still too correctly depicts the effects of labor in the dust, etc., of such factories.

* Second Annual Report Massachusetts State Board of Health, p. 414.

† Dr. Ludwig Hirt. Krankheiten der Arbeiter, Breslau, 1871.

"Soon after entrance into the work-shop, the workman perceives it (the dust), in a most unpleasant way. In those who are unaccustomed to it, it causes continual tickling in the throat, which incites hard coughing and occasionally whitish expectoration. In the first year of work, the operative suffers constantly from bronchial catarrh, and a considerable proportion of those who come to this occupation from rural districts abandon it, even though they may be only sufferers from constant catarrh without other worse symptoms.

"If, however, they persevere in this occupation, more important symptoms supervene, sometimes soon; often after a year of work, such as cough with pectoral pain, marked anæmia, obstinate debility and loss of appetite. White viscid sputa is now expectorated with difficulty, and shows under the microscope cotton-fibres for several hours after quitting the factory. Marked emaciation,—sometimes, but rarely, profuse diarrhoea,—deprives the operator of his strength, and compels him to leave his work and betake himself to his home or to the hospital.

"These, of course, are the most unfavorable, and happily not the most frequent cases. But people very often go on coughing their whole life long, and die at an advanced age.

* * * Sickly people, especially those liable to pulmonary affections, do not bear up long. *The most unfavorable cases are usually found among women;* and in a factory of 300 or 400 operatives, there will generally be found two or three cases of this kind every year. Other diseases of not infrequent occurrence are phthisis, acute pneumonia, and, as has been already remarked, chronic catarrh." The processes of "carding" and "stripping," even since the introduction of "Wellman's patent stripper," etc., still fill the air with innumerable particles of dust which penetrate everywhere, and, in some mills, in a few minutes sufficiently coat a smooth plate of metal to permit the finger to make marks thereon, while a sunbeam discloses the extent to which the atmosphere breathed by operatives is charged with the foreign substances.

A careful inspection of a very large number of factories has established as the chief non-hygienic conditions: the excess of flying dust or "fluff"; the extreme heat maintained in

all departments ; the uncomfortable and unhealthful humidity, particularly of the weaving-rooms, from steam ; the special irritations from the operation of "stripping," and, perhaps, to some extent, from that of "grinding" ; the irritation and noxious influence consequent on the "sizing" employed ; and the specially evil effects of foul privies.

When to these are added the ills that result from insufficient, unfit, and hastily devoured food, and wet clothing, from the long standing, reaching and lifting (as of heavy beams), and the depressing tendencies of the monotony and unrelenting exactions of the processes themselves, we have a sum total of causes quite sufficient to wage successful war upon the general health and to break down and overthrow the special forces nature would fain establish in those subjected to these repressing agencies.

Of several of these agencies enumerated, the English Commission reported last year, to Parliament, as follows : "As to ventilation, in almost all cases, it was extremely bad, and in a large number of instances there was none whatever. * * * The heat is kept up by steam-pipes, and obvious motives of economy dictate that as little as possible of it shall be lost by open windows. * * * In most of the spinning-rooms there are one or more privies, usually of very rude construction, and almost always opening directly into the room, with very inadequate apertures to the outside air. The soil falls down a large untrapped pipe, which is flushed often or seldom, according to the varying attention given it." A picture that would be entirely correct of many factories to-day in this Commonwealth, though we are glad to believe that a marked improvement in these regards has characterized nearly all larger factories and some of the smaller.

Wherever the manifestly injurious influences we have mentioned are present, there cannot fail to be both physical and mental impairment, ill-suited to sustain or to resist the further encroachments of the demand made by certain of the processes of factory labor for *alert co-operation of mind and body*.

Exhibiting, as it does, so great a variety and grave a degree of devitalizing power upon woman, in its concomitants otherwise, it is fortunate that cotton-factory labor necessitates so

small an exercise, as it does, of the expressly untoward influence which arises from coördinate energy of mind and body.

In cotton manufacture, it is only in the routine work of attendance on machinery which requires the exact adaptation of mind and hand at precise times, that this coeval demand upon thought and its executing power is made, and here the speed is rarely such, or the concentration so absorbing, as to prevent some degree of unconscious or "mechanical" response and restful inattention.

The numerous causes provocative of pulmonary disease which have been cited as existing in factory labor, leave no room for doubt that the destruction of menstrual power which so certainly supervenes on the development of phthisis, may readily receive its origin here, while it is equally evident that these causes, if coöperating with those acting directly upon the function itself, can but hasten the result it should be the aim of the employer and the legislator, alike, to avert.

A searching analysis of the "examination-notes" of 124 mills in the Commonwealth shows to have been specially noticeable for wretched ventilation, 60; while there were "noted" as observable for over-heated rooms (particularly weave-rooms), 13; dusty and exceedingly dirty condition, 15 (from "size," 1); bad condition of privies, nearly all; employment of girls under ten years, 8.

We pass now to the consideration of several employments, in none of which purely muscular overtaking occurs, and in which the innutrition and numerous non-hygienic influences inherent in mill-life are principally absent, but in which the most potent of causes of sexual derangement, *simultaneous activity and concentration of mind and body*, is noticeably present. It is observable, moreover, that in these, the distinctive feature of the corresponding activity in factory labor, viz., monotony and its depression, is lacking; and inasmuch as, despite these advantages, it is found that, as a whole, this order of labor is far more rapidly and certainly destructive of the normal balance of the sexual principle in women, we must conclude, that, in the greater *rapidity* of effort, physical and mental, involved,—in the great increase of *concentration* required; and in the *cotemporary* exercise of the forces brought into play,—the exceeding deterioration must reside.

It is but fair, however, to observe that the class of females engaging in these occupations (all of which require a higher degree of intelligence than most mill-work) is of a more highly-organized character, and, as being of more sensitive fibre, might rationally be expected to sooner exhibit the results of the attrition and wear incident to these pursuits.

TYPE-SETTING.

The setting of types, the labor of the "compositor," as this servant of the public is called, holds a peculiar position in the class of physico-mental activities from the facts that it—

1. May become partially unconscious or "mechanical" labor.

2. Is supposed to possess certain dangers of poisoning from the nature of the metal composing the types, and—

3. Has in the postures necessary, its sedentary character, and the heat at which "composing-rooms" are unavoidably kept, its particular non-hygienic conditions.

It will readily be seen that a closely attentive activity must be exercised to "follow copy" and accomplish a "paying" amount of work with sufficient correctness to satisfy employers. There can, of course, in this labor, be no distracting influences, for to set type with a remunerative degree of rapidity and correctness (and most type-setters are required to "correct" their own "proofs," or errors), the eye must "take in" the words of the copy and their relations to each other, their punctuation and character (whether italics or other type), and various other details known only to the guild; must transmit the intelligence absorbed by the eye to the hand and direct it with celerity to that particular one of the compartments in a type "case," which contains the particular type called for, and deftly arrange it "wrong-end first," in the proper relation to its fellows contained in the "composing-stick." To read the copy (often most illegible); to supply or correct punctuation; to determine the type "spaces," "leads," etc.; to observe the intended "sense" of the writer; to separate "sticky" type, "keep them on their feet," place them correctly, duly "spaced" and "leaded," as well as punctuated; "keep the place" in the copy; and do all these quickly, sometimes with cold hands, and with various interruptions,—it is obvious, is an employment

that is most exacting of mental concentration and manipulative rapidity. A good female compositor can "set" and "correct" 30,000 ems per week, for which she would receive 30 cents per thousand, although many are employed at a set sum per week, rarely exceeding \$10; and at this rate she would be expected to be able to set nearly 6,000 ems per day, to accomplish which it will be seen that there must be constant labor of a very rapid character.

As an offset, however, we have the fact that a considerable portion of the work becomes "mechanical," a skilled "compositor" knowing without looking, exactly where in her case to find the type wanted, while the placing it in position in the "composing-stick" correctly, is accomplished by the aid of another of those marvellous processes of mental telegraphy with which our daily actions are replete. The type has upon one side a series of "nicks," which, being felt by the finger, the brain is informed, and, without the intervention of the eye, the type is turned to the correct position and "set" by the reinstructed finger. The "wrong-end-first" position of the type is, moreover, no impediment to the "compositor," who reads "backwards" and "upside-down" as well as other people regularly read from left to right. Hence it is to be considered, that although an employment of distinctly *co-operative physico-mental activity*, it is lessened in degree as such by the facility with which its processes, in part, become "mechanical." It is a question not readily determined, whether or not the pernicious effects of the depressing powers of lead and antimonial poisoning (where they are operative), and of the heat and unhealthy postures mentioned, are the equivalents of the gain derived to the "compositor" by his power of making the work partially "mechanical"; and so advantage and disadvantage balance each other and leave the employment a pure type of its class. An exceedingly interesting feature of type-setting is the fact that it is claimed by first-class "compositors" that the element of memory enters largely into, in fact becomes a governing power in the occupation, thereby changing the direction and character of the mental concentration. Having read her "copy," it is asserted that the "compositor," if of good memory, retains the sentence read, in mind, "fol-

lows copy" no more till a fresh sentence is needed, and then concentrates all thought upon retaining the sentence and the point in it to which work has progressed, leaving the eye free to go with the hand to the "case," aiding the correctness and celerity of the latter. It is plain, that if such is the mental process, the greater the retentive power of memory (largely, of course, a matter of training), the more freely and rapidly the work may go on, the true "concentration" being upon the two points mentioned, viz., the general retention of the sentence, and the place reached therein by the "compositor."

It is proper to note, moreover, in this connection, that a "compositor" who is quick of perception, and is skilled in grammatical construction, punctuation, etc., is able to perform her work with much less fatigue than one of slower comprehension and less accomplishment. Finding that the foregoing views, as to the part played by memory, and the degree of skill in perception, grammar, etc., were fully recognized, it became a matter of much interest to confirm them by actual experiment and inquiry. A well-established case was found to be familiar to the older compositors, of a compositor, who had been an "expert," becoming totally *blind*, but continuing his work, by having a boy to read long extracts of his "copy" to him, his cultivated powers of retention being remarkable, and it was found that his "proofs" were, in the main, as correct as those of his fellows. Desirous of determining the real force of this claim, a lady compositor was carefully blindfolded, and the "copy" being read to her, it was found that the work could undoubtedly be thus performed, though with not quite the same correctness as ordinarily, but more rapidly, and resulting in greater fatigue. The statement of the operator was to the effect that her whole concentration of mind was upon the two points already mentioned—the retention of the copy, and her place in it; and this concentration she considered quite equivalent in demand to that required by the slower process of setting with the eyes open, stating that she missed the aid "in keeping the place" obtained by the hurried glance upon the state of progress in the "composing-stick." Whatever ameliorating circumstances it may possess, in any or all of the ways mentioned, it is evident that type-setting

is an employ exacting an unusual degree of mental concentration and energy, with great rapidity of manipulation, and, as such, if our previous hypotheses have been correct, cannot fail to have a marked effect upon the health of its female operatives. Let us see how these hypotheses are borne out by the facts, as variously obtained.

Mr. M——, brought up in the business from a boy, now engaged in it for eighteen years, having worked in offices with female "compositors," ranging from one to twenty in number, and including from two to three hundred in his observation, states: "Few girls can continuously set more than five thousand ems per day, while men will set from seven to eight thousand, not because the girl is not quicker in movement and perception, for she *is*, but because she can not 'stand it'; she is not strong enough. It seems to be the back that gives out. Girls cannot work more than eight hours, and keep it up; they know it, and they rarely will,—and even this seems to 'pull them down,' so that it is extremely rare that a girl continues more than a few years at the business."

Mr. B——, foreman of a large printing establishment, says: "Girls must sit at the 'case.' I never knew but one woman, and she a strong, vigorous Irishwoman, of unusual height, who could stand at the case like a man. Female compositors, as a rule, are sickly, suffering much from back-ache, headache, weak limbs, and general 'female weakness.'"

Mr. D——, the publisher of a well-known periodical, says: "I have had hundreds of lady compositors in my employ, and they all exhibited, in a marked manner, both in the way they performed their work, and in its results, the difference in physical ability between themselves and men. They cannot endure the prolonged close attention and confinement which is a great part of type-setting. I have few girls with me more than two or three years at a time; they must have vacations, and they break down in health rapidly. I know no reason why a girl could not set as much type as a man, if she were as strong to endure the demand on mind and body."

Miss J——, a lady compositor, says: "We cannot stand at the 'case.' It increases back and head ache, and weakness of limbs, as well as a dragging weight about the hips. I have been at this work five years, but have been frequently

obliged to give up for vacations, from peculiar troubles and general debility. I began to menstruate when fourteen; I am now twenty-two. I was well until I had set type a year, when I began to be troubled with difficult periods, and have been more or less ever since. When I go away, I get better, but, as often as I return to my work, I am troubled again. Have wholly lost color, and am not nearly as fleshy and heavy as when I began work. I have now a good deal of pain in my chest, and some cough, which increases, if I work harder than usual. I am well acquainted with many other lady compositors who suffer as I do."

Miss S——, a lady, long in charge of the "composing-room" (female department) of a large printing-establishment, testifies: "I was myself a compositor, and have had scores of girls under me and with me, many of whom I have known intimately. I have no hesitation in saying that I think I never knew a dozen lady compositors who were 'well.' Their principal troubles are those belonging to the sex, and great pain in back, limbs and head. Most of those I have known have preferred going into other employments than to continue in the business. Many seem to recover fully, after leaving the business; but I have known several who have sickened and died of 'consumption,' and some are always troubled with 'female complaints.' I know a number who have married, and have children, most of them, seemingly, bright and healthy. Girls cannot stand at the case like men, and ought not to try to work, if it can be helped, at certain periods. I think the heat and ill ventilation of our rooms is bad for us all."

Dr. G——, a physician in one of the suburbs of Boston, gives his evidence as follows:—

"I have had several cases of menorrhagia (profuse menstruation), a few of retarded or difficult menstruation, and a single case of type-poisoning, in female compositors. They all tell me that the work produces backache and headache, with more or less trouble periodically. The case of poison was an interesting one, and proved itself such conclusively. As often as the girl would leave her work for a time, her unfavorable symptoms would entirely remove; just as soon as she took up the types again, the trouble was renewed. It

is an employment requiring so close confinement and such careful attention, that I am at no loss to understand its effects."

Mr. H——, an employé of the government printing office at Washington, informs us: "I have known a good many of our girls in the composing-rooms here; and quite a number that I have known have come here into the works, strong and healthy looking girls, and have gone away in a few years, pale, thin and sick. I know, from conversation with some of them, that the work upsets them as women, and they cannot continue the work long without suffering. I should say, that perhaps their pleasure-seeking, after work—as balls, parties, etc.—has a bad effect, too, but all do not follow that course."

Dr. B——, a physician to dispensary patients, says: "I have seen quite a number of female type-setters who were suffering from uterine troubles and disturbed menstrual conditions. I think that these, with obstinate constipation and occasional cystitis (inflammation of bladder), are their chief troubles, beside the ever-present 'headache.' Mind and body are compelled to act so quickly in that work, that I am not surprised at nervous effects, particularly in young women not fully developed."

It will be seen from the foregoing, that the female compositors themselves, their employers and associates, those who superintend them, and their physicians, all agree to the effects of the labor, and the latter recognize the cause. Although subject to modifying, and, to a certain degree, puzzling, circumstances, there can, apparently, be no doubt of the relation existing between type-setting as an employment possessing the physico-mental draft, and the conditions found to exist in those devoted to it. Counting it, therefore, as an interesting and conclusive illustration of the physico-mental influence upon the peculiar function of woman, and leaving our suggestions concerning it to a further consideration, we pass to the review of an occupation still more closely a type of concentrated mental and physical co-operation,—

TELEGRAPHY.

Those at all familiar with the demands upon the nervous energy and manipulative dexterity required by the processes of telegraphy, will not be surprised that the rapidity, readiness of perception and response, sensitiveness to "time," close attention to the "delivery" of the instrument, manual celerity, and often simultaneous action, in "receiving," counting, writing, and "checking," are found to exert upon the general and special health of the youthful "lady operator" a most positive and rapidly injurious effect. That it has not more widely attained a reputation as a "non-salubrious" employ, is due to the facts, that those engaged in its most responsible, and therefore most hurtful, positions, are, with very rare exceptions, safely past the forming-period,—are confirmed in their possession of womanly attributes,—and those of impressible years are usually employed in "branch offices," etc.; places that do not exact that continuity or concentration in their work that "main offices," etc., must have. These being the facts, it is doubly interesting to find that so purely is the occupation one of the physico-mental activity type, that, though in the one case the labor is intermittent and permissive of rest, and in the other the operator has passed the climacteric, the demands for concentration and co-operative alertness are so great, that both suffer in health, in a marked and universally recognized manner. It is but fair that the constrained posture, sedentary habit, obstinate and confirmed constipation, and over-heat of the rooms, which very generally affect the operator, should be given due place in the causative effects of this recognized disturbance of health; but to the character of the work itself is the great proportion of the result due.

While, therefore, this particular avenue of employ cannot be looked upon as one of those affecting, to a wide extent, the peculiar sexual function in forming-girls, from the fact that comparatively few such are employed therein, it is of great interest, as establishing in a marked manner the soundness of the principle put forth, that from a rapid exercise of concentrated mental and physical energy, there occurs the most emphatic effect upon the function in consideration.

Wherever young girls are called upon to engage in the full requirements of a busy office, or experience a sudden increase of labor and responsibility, the effect on the economy is immediately apparent, and especially in the direction of the menstrual result, if cotemporaneous.

"It is the common thing," says the superintendent of a line, "for young beginners, those promoted to larger offices, and those placed suddenly upon responsible posts, to suffer a degree of physical prostration immediately thereafter, and I have noticed this to be proportionate to the age and nervous habit of the individual." Numerous inquiries of operators, in a score of offices, have produced the unvarying answer to the question, "How long can you stand this employ in a busy office?" "Not over a year, without a good vacation of at least a month." Indeed, that this is so, the managers of the principal lines seem to recognize, inasmuch as a month's vacation is allowed their "operators" in each year, though, it is to be greatly regretted that, even for sickness, they will make no further allowance, compelling the operator to resign if even a day or two more, however imperatively demanded by illness, is taken.

On being interrogated as to the special causes and effects of prostration in telegraph offices, the first reply of nearly all young "lady operators," perhaps not unnaturally, is to the effect that the close confinement, over-heat of rooms and position, are principally operative; but more direct inquiry calling out the more active and self-examining thought, invariably produces the reply, that "the nervous debility, 'cold feet and hot head,' and dizzy headache, make up a good part of the results;" while particular inquiry, in a large proportion of cases, establishes the fact, *always*, in the larger offices, that menstruation occurs more frequently than it ought.

When it is known that in the average business of a large city office, a "lady operator" often receives a string of messages with the ear, writes them as they come, with her right hand, counts them with her eye, checks them with her left hand, and answers her "O. K." to the sender, it will be readily understood that the interplay of nervous influences must be of the most rapid and exhaustive character, because,

however expert the operator may become, she can never become purely automatic—mental *concentration* must be drawn upon to the full. A "lady operator," many years in the business, informed us: "I have broken down several times, completely worn out, suffering from sheer nervous debility. I had 'turned of age' safely, and was well in this and every other particular when I entered the office; since I broke down the first time I have never been 'right,' though much improved when out on my vacations. I could not have continued as long as I have, if it had not been that I have been changed about in small offices, and have been part of the time in charge of rooms."

Another said: "Our girls all come to us looking bright, fresh and ruddy; but it is not long before they lose color, and strength seems to go with it. While I think it a nice occupation, and better than standing in stores or working in mills, it would be much better if vacations could be better arranged, and the confinement lessened."

Miss —, for several years in charge of the female department of one of the largest offices in the country, testified: "One year is as long as one can work in a busy office without a good vacation. The confined position, constipation, heat and dizzy headache, I think, are the most noticeable troubles of 'lady operators' who are 'grown up.' The hours are too long for such strained employment. From 8 A.M. to 6 P.M., with only an hour for dinner, makes too long a day for the kind of work. I am sorry to say some of our girls eat their lunch in the room, not going out at all. A woman can do as much as a man in this business, and do it as well, but does not get the same pay for it. A skilful 'lady operator' here, will sometimes have from 200 to ~~230~~ messages a day, *but she could not stand that rate more than a month.* Most of our chief-office 'lady operators' are from 23 to 24 years old, our youngest is 23; they generally begin to learn from 16 to 18 years of age, and *the youngest, of course, feel it most.* I think that with those of our age, the chief menstrual trouble is with its occurring too often."

An inquiry of those among female operators, who more properly came within the designation of "forming," has, as in

the case of the inquiry among "basket-makers," last year, developed some curious and interesting results.

Miss C., a "lady operator," 19 years of age, located at an office in a quiet town on one of our railroad lines, owing to an accident on the line, had her office suddenly besieged for an entire day and into the night, by an unprecedented business, taxing her to the utmost. It occurred just at a "peculiar period," a complete suppression resulted, and a general prostration ensued, from which she has slowly and imperfectly, as yet, recovered.

On "election night" the demand upon operators is, of course, unusually heavy, and several of the female operators at large centres state that, for some days after, their sense of debility is great. In two cases the periodicity was notably disturbed by this or any other unusual requirement of the work, just previous to the time of normal recurrence.

It not infrequently happens that sickness of an operator, or other contingency, requires the transfer of a young operator from her usual post to one of greater responsibility and more exacting duties, and in such cases the operators are quite liable to find that a considerable disturbance of their periodical function occurs. Whenever a young operator is transferred to one of the chief offices, especially if a person of "nervous temperament," the increased responsibility and nervous agitation (unless a person of unusual confidence and poise) will not infrequently occasion a disturbance of this character more or less prolonged. The weight of evidence would seem to indicate that with those of the "forming-period" the result of such influences is to repress and retard, while with those of maturer years, it is to render more frequent and profuse. It is to be regretted that it is not readily possible to more completely separate the other deleterious influences, as posture, confinement, etc., from the distinct operation of the psychico-mental concentration and activity. A review, however, of the foregoing, indicates conclusively that—

1. Though the extent of the employ of "forming" girls is not wide, wherever occurring, the results are those declared, and are exactly such as we should expect from the class of influence at work.

2. That this type of influence exerts its specific effects, even upon those more advanced in years, and—

3. Its results are more quickly realized than those of any other influences tending toward the same channel of ill health.

SEWING-MACHINE LABOR.

The several branches of industry hitherto considered, have all been such as have their physical requirements principally met by the labor of the hands alone (except such involvement of pedal-power as was embraced in standing, walking, etc.), but, in sewing-machine use, we have an employ calling into exercise the active service of the feet and lower limbs, which, as more closely allied to the organs involved in menstruation, and to a certain extent enjoying the same vascular system, may be considered as possessing a new relay of interest. While all the pursuits dwelt upon have been characterized by a greater or less degree of disadvantage in posture, in the use of the sewing-machine this disadvantage is rather aggravated than otherwise. There is no need to enlarge upon the extent of its use, nor to state that the use of power-propelled machines does not fall under our review, except under "suggestions," nor will it be necessary, in view of the exhaustive examinations of the subject by Guibout,* Decaisne,† Nichols‡ and others, to do more than adapt their findings to the place they properly hold in relation to the results we are considering.

While the investigations of Guibout are characterized on the one hand by an exaggeration of the injurious influences incident to sewing-machine use, and those of Decaisne, on the other hand, by a too slight regard for these influences (though his inquiries were extended), the more nearly trustworthy deductions of Dr. Nichols‡ establish a series of "conclusions" which expose a grave degree of harm. The comprehensive question asked by Dr. Nichols of his correspondents was, "Have you observed any injury to health from the use of sewing-machines used by foot-power? If so, please to send us all the information you may have on the subject."

* Paper before "Soc. Médicale des Hôpitaux."

† Ann. d'Hyg. Pub. 1870, 2d Ser. Vol. 36.

‡ 3d Rep. Board of Health, Mass., Dr. A. H. Nichols.

Replies were received from one hundred and thirty-eight correspondents, representing one hundred and twenty towns in Massachusetts, and several others.

Eighty, report more or less ill effects observed by them; the balance, giving negative or doubtful answers, were mainly from towns where the machines were used only in private families, etc. Our own analysis of the published replies shows that sixty-nine physicians replied to the query. Of this number, forty-four answered in an emphatic manner, declaring the results to be undoubted upon the organs of menstruation and the function itself. Four, only, held negative views, while the remainder assigned to the use other results indirectly operative to the same end.

We quote a few only, taken at random from the many unequivocal statements of these physicians as to the pernicious effects of this industry.

Replies from Massachusetts Physicians.

A. "Quite a number of cases, in which pain and lameness in the back and thighs, dyspepsia, leucorrhœa, vaginitis and menorrhagia existed, I have attributed to their use."

B. "The most common disease I have seen is a chronic form of ovaritis, which it is impossible to cure while the girl is at work."

C. "The use of the machine during menstruation is especially injurious. I have even known a case where a severe attack of ovaritis and retroflexion of the uterus followed its use during a single menstrual period."

D. "I think I have observed a greater tendency to dysmenorrhœa and other uterine troubles among those who use the sewing-machine for a living than among others."

E. "Cases of unmistakable injury, very frequent a few years ago, causing marked irregularities of the menstrual function and their usual *sequelæ*. The almost universal introduction of steam-power has greatly diminished this class of cases."

F. "Constant and long-continued use of sewing-machines, moved by foot-power, tends to induce functional diseases of the uterus. Three girls working in the same shop, ten hours

daily, for two or three years, now suffer from dysmenorrhœa, from which they were formerly free."

Other Physicians.

A. "I have investigated quite a number of cases where diseases were produced by running sewing-machines by foot-power. Among these diseases, I have noticed several cases of lameness of limbs and back, menorrhagia, dysmenorrhœa, amenorrhœa, leucorrhœa and displacements."

B. "I have no doubt whatever that this employment among females is more powerful and efficient in the production of disease of various kinds in that sex, than almost all other causes combined."

To these expressions of physicians, presumedly as safe a criterion of the real results produced by the occupation as can be obtained, Dr. Nichols has added numerous varying experiences of the work-women themselves, which, though not as harmonious or positive in their findings, are sufficiently so to make it certain that a grave degree of peculiar disturbance is recognized by them. The "conclusions" given by Dr. Nichols, are: "That the illnesses which most frequently prevail among professional operatives (as distinguished from home operatives) making use of the treadle (foot-power), are—

(a) Indigestion, attributable to the unhealthy conditions in which they pursue their occupation, particularly the impure atmosphere of the work-rooms, the sedentary employment, and want of open-air exercise.

(b) Muscular pains, affecting the lower limbs and trunk, produced by the long-continued, frequent use of the muscles.

(c) Diseases peculiar to women, aggravated by, rather than caused by, the plethoric condition of the pelvic organs, induced by this exercise.

(d) General debility. By this is meant a state of physical deterioration and nervous prostration brought on by over-work."

Adding to these conclusions the single remark, that our own observations and review of the data given would indicate a classification of these influences upon female ill health as more

decidedly "causative" than "aggravating," we may fairly educe therefrom the belief, that we have, in the continued use of the sewing-machine by foot-power, a source of special functional disturbance in women, which is extensive in its reach, and embraces overwork;—often under bad sanitary surroundings,—labor to which much of the monotony and unremitting character incident to most machine-work attaches; and muscular activity coupled with a considerable degree of mental concentration. This last being, in an intermediate degree to that required by factory machinery, and that required by the telegraph instrument. The evidence of the direct influence of this species of employ upon the catamenial function, is notably abundant, and raises the query, if the fact of pedal rather than manual muscular power as here involved, is the *real cause* of a greater effect; or, whether the simpler methods of argument cause those affected (by localizing the energy in closer relation to the parts seen to be most influenced) to *infer* an injury that they would be slow to recognize, when remote agents, as the hand, are active, and the brain must be summoned to greater participation to produce the effect. As an employment still enlisting the labors of large numbers of young women of the ages we are considering, notwithstanding the very considerable introduction of steam-power to its uses, it is well worthy the consideration of the economist and legislator; for, from its ranks, the offices of wife and mother are filled to no mean degree, few of the class continuing many years in the work, while those engaged therein are, as a rule, of different fibre from those of factory labor, and do not, like them, raise up and perpetuate succeeding generations of employés for the same work.

Having considered the various classes of labor, as regards the degree of mental or physical force, or both, involved by each, acting, through several more or less distinct types of either, upon the special powers and relations of sex, we may consider for a moment certain agencies of employ peculiar in themselves,—one from the comparatively narrow limits to which, in its full force, it is confined, although *perfectly pure* in its type; the other, from its long, and generally supposed, most pernicious influence, which is found by investigation to be, in great degree, wanting. These are: *first*, money-counting,

as prosecuted at the treasury department at Washington and elsewhere; and *second*, the manufacture of tobacco into cigars, etc.

The continuous counting of money, as conducted as a regular employment, presents, perhaps, the purest type of manipulative celerity, co-operative with extreme mental concentration, known to investigators.

Satisfied that a pursuit so entirely representing extreme mental concentration with most rapid physical manipulation, could not fail of producing a marked effect upon such girls of "forming" age as should be employed therein, inquiry was made at the United States Treasury at Washington, in the "counting" department of which, some thirty ladies are constantly employed in counting "currency." This counting is of pieces of one denomination at a time only; *i.e.*, a person counting "tens," counts "tens" only for the time being, and one upon "fifties" handles only pieces of that designation,—hence the pieces, and not the amount, are counted; the number of pieces multiplied by the denomination, of course, giving the result in dollars and cents. The skill acquired in this department is truly wonderful, some of those employed counting millions of pieces per month. Let any one take a few hundred pieces of currency and attempt to count them as rapidly as possible, and it will be found that not only is the manual movement exceedingly rapid, but that the mental concentration is most intense, monotonous and unremitting, while the result attained, even at the utmost endeavor, is not very great. It will hence be readily understood that in the constant employ at this occupation there must of necessity be a most exhausting draft upon the mental and physical forces. Exactly such is found to be the case; and this pursuit, which, it will be seen, combines to a degree that no other we have considered does, the several special influences of mental depression, concentration, alertness, continued exercise and monotony, exercises its deleterious power upon the periodicity of its followers in the way and with the rapidity that we should expect.

Miss —, the lady longest in the employ of the department, and in charge of the "counting" (over thirteen years), states, that, "The girls usually come into the work looking rosy and healthy, but they very soon grow pale-lipped and

pale-checked, and soon begin to require more or less absence. When they first begin the work, they all sit very straight and count very fast, although I always counsel them against the fast counting, for no one has ever yet undertaken it that did not break down, if young. Gradually they learn to count faster, but they cannot continue in the work but a short time. The sickness and absence become more frequent, and by and by they are obliged to leave altogether. We have those over fifty, and one of sixty years of age employed, *and they are the only ones, with perhaps a single exception, who do not seem to feel the effects.*"

Question. "What is the exception?" *Answer.* "We have a young lady who counts easily, and looks off her work more or less, and is not in general so closely confined to her work as the others, and does not seem to feel it as much as they."

Q. "Do you consider that she can do her work 'mechanically,' then?" *A.* "She thinks she can."

Q. "Do you?" *A.* "We do not find her work as correct."

Q. "You would hardly be willing to trust it?" *A.* "We do not."

Q. "Have you satisfied yourself of the way, the direction, in which this steady and concentrated labor acts upon your young ladies?" *A.* "They all suffer more or less from headaches, severe backaches, debility and constipation, but all the younger ones, particularly, from too frequent and profuse return of their menses. I think this last the worst feature; for as soon as that begins, they lose color, grow nervous and feeble, are often absent, and suffer along till they 'give up.'"

Q. "Are there any influences connected with the work other than those which, as we see, are part of it, that act badly upon the employées?" *A.* "Our rooms are fearfully hot,—most unhealthily so, I think,—and of course the stoop which a girl soon gets is bad, as well as her sitting so long in one position. No otherwise unhealthy 'influences.'"

Q. "You consider, then, that the very character of the work is surely and rapidly prejudicial to the health of the young women engaged in it, and especially on account of their

sex?" A. "Yes, I do, and they cannot remain in it but a very short time. It told upon me severely when I began, and I was matured when I began, and if I had been at the counting, I could not have remained."

We may fairly conclude from the foregoing candid and valuable testimony:—

First, That a sure and swift result must follow to the immature female whenever she engages in an employ requiring mental and physical concentration and celerity.

Second, That the disturbance will be proportionate in the rapidity of its advance and degree, to the degree of concentration, celerity and continuity of employ.

Third, That its most active and most baleful effects will be upon the functions peculiar to the sex.

Whatsoever, therefore, in industry, exerts these influences (whose present and prospective and almost unending results we have pointed out), demands the exercise of all ingenuity, wisdom and care, to secure its alleviation and removal. Certain of the employments of women include these evils from seeming present necessity; but it becomes the duty of all to direct their studious attention thereto, if perchance a relief may be found, while for other forms of employ only the false notions that exist need to be overthrown, to banish at least some of their attendant evils. We heartily agree with the prominent Philadelphia physician, who writes as follows of the practice of compelling shop-girls to *stand* behind the counter during all their hours of service: "The custom is selfish; cruel and useless,—selfish on the part of the proprietor, requiring the women to stand all the time, whether serving customers or not, and this merely that they may appear to be always on the alert to wait on those who call. To stand from seven or eight in the morning to six, eight or ten o'clock at night, as is the custom at certain stores, with a short time at mid-day for dinner, would weary any *man*. But to exact such service from girls and women, is damnable! Their physical powers are, it is well known, much weaker than those of men, at any rate, and by their anatomical and physiological peculiarities they are entirely unfit for bearing this especially severe toil, namely, standing all day long. My professional

brethren who practise largely among women are constantly witnessing the evil consequences of this most cruel 'rule of the establishment.'" Our attention was directed not long since to a shop on one of the principal thoroughfares of Boston, in whose exceedingly narrow dimensions of only eighteen by forty feet, by eleven in height, heated by a furnace, no less than fourteen young ladies, ranging in age from seventeen to twenty-four, are employed, obliged by the "rule of the establishment" "always to stand, to dress neatly, and to be absent only half an hour at dinner." Poisoned hourly by the polluted air, suffering from the enforced standing, obliged to dress "neatly" (which was found to mean "showily"), deprived of any opportunity for recuperation in the fresh air (for half an hour barely suffices for dinner), poorly paid, and any loss of time rigorously deducted, it is not to be counted strange if these girls, partaking so continually of physical and moral poison, become both physically and morally unsound. A morality that robs and oppresses does not inculcate a morality to resist temptations to illicit pleasures or deceit, doubtless in some instances impelled to by the deprivations and conditions imposed.

The second of the special considerations enumerated is: The manufacture of cigars, etc., the investigation of which was undertaken on account of the generally received opinion that its processes must, from the noxious nature of the weed, have a most pernicious effect upon those, especially girls, employed therein. The result of the inquiry, as has before been intimated, negatives this opinion, and places the occupation, as to its hygienic influences, in the class with those involving only stooping-posture, confinement, over-heat, constipation, ill-ventilation, and, to a small extent, "dusty particles."

Ramazzin,* Fourcroy, Cadet-Gasscourt, Tourtelle,† Percy, Patissier, Merat, and others, have all written against the commonly *suspected* active influence upon health of tobacco manufacture, but MM. Duchâlet and D'Arcet, after inspecting four thousand five hundred and eighteen operatives engaged in tobacco manufacture, concluded: 1. "That in the greater part of the factories there was never known an example of an individual who could not accustom himself to the emanations

* De Morbis Artificum.

† Elémens d'Hygiène.

of tobacco, and that, in the rare cases where it proved injurious, it was always in a particular part of the process.

* * * * *

3. "That tobacco, far from producing, in those who prepare it, death and narcotism, does not even influence their nervous system.

* * * * *

4. "Not only is the tobacco without any effect on the health during the first years devoted to its preparation, it has not the least ill-consequences in more advanced life.

* * * * *

6. "It is proved by innumerable facts that the manufactories of tobacco are not in anywise injurious to the men, animals or plants which may exist in their vicinity."

It thus appears that this much-maligned article is really innocuous. "Yet what practitioner," say MM. Duchâlet and D'Arcet, "who had not had occasion to visit the workshops, and study their influence, would not be forced into the contrary belief by the imposing authorities who have written thereon."

From the observations of M. the Viscount Simeon, director-general of the administration of tobaccos, of France, through the physicians of factories, it appears that "Tobacco appears but rarely to produce sensible effects on the workmen, even at the commencement of the work."

Dr. Melier,* who has lately investigated this subject with the greatest care and attention, states that *fresh* workmen have always some difficulty in accustoming themselves to the atmosphere of the workshops, charged as it is with the particles of tobacco. He states that they experience the following symptoms, in general: a more or less severe headache, accompanied with sickness and nausea; they lose their appetite and sleep, and suffer from diarrhoea.

"These effects are more constant with females than males, but the former are more in number than the latter; in Paris there being eight hundred women to five hundred men."

It appears that these early troubles speedily disappear, and it is even claimed by some that phthisis, rheumatism, etc., are prevented by the manufacture.

Our own investigations at Westfield, Cambridge, Saugus

* Waller Lewis, Rep. on "Ord. in France for Reg. of Noxious Trades."

and Chelsea, lead us to believe that the foregoing conclusions are substantially correct, the "fermenting" and "cigar-making" dust, being the chief injurious influences, aside from the general causes alluded to, operative upon health in this pursuit. That the "dust" is a "continuing cause" of annoyance and injury, cannot be doubted; and wherever the stock used is excessively dry, the effects must be correspondingly untoward; but this is rarely the case, and the narcotic influence supposed to exist being found inert, the employ may fairly be considered as not more insalubrious than the generality of sedentary occupations.

SUGGESTIONS.

It has not been difficult to discover and point out the errors and evils that attend upon the several forms of employ, and that operate against the health, happiness and usefulness of women. To suggest the remedies for these is obviously a matter of no small moment, and not easy of accomplishment.

As there are basis principles of health, which are affected, as we have seen, by these conditions of employ, so are there basis principles of error which lie at the root of all branches of wrong.

We believe that the grave mistakes of our labor system, as affecting the class of females considered, are—

First. That we employ those therein whose years absolutely prohibit their being employed at labor *at all*.

Second. That their hours of labor are too long; and—

Third. That we sadly neglect the measures that are adaptable to ensure a correct sanitary condition of our operatives during their labor.

Under one or the other of these cardinal-forms of error, all the specific evils of different occupations or circumstances will arrange themselves.

No child, or young person, of *either* sex, under the age of fifteen years, should ever be engaged in any form of industrial employ necessitating absence from school or a draft on vital energy. The normal position of those of that age is in the work of education, and until this is recognized, the nation and individuals must suffer present and future loss,—loss of bodily vigor, without which a nation must die,—loss of knowl-

edge, which is power,—to upbuild, to keep, to develop,—loss in the higher values that belong to the nobler parts of our being, and that cannot expand in a soul or body, dwarfed and exhausted by the gross demands of purely animal existence.

But it is objected, it can be clearly shown in this Commonwealth that, while it is true that the money in savings banks, to a considerable extent, belongs to laboring people, little of it would be there if it were not for the labor of women and children, the wives and offspring of laboring men; indeed, that without their assisting labor, it is proved, that the average laborer could not make the ends of the year meet. Granted, and yet our proposition is nevertheless of full force, and for two reasons: *First*. Because it is plain that there is an error in that price and form of labor that will not permit a man to support his family in comfort without drawing on the vital powers of those to whom we must look to make his place good, and to not only carry on, but improve upon, the work of society. *Second*. Because we can never afford to set a price upon body and soul, and any barter of strength, happiness and knowledge, for mere money-return, is an exchange that will surely rob us in the long run. Is it true, as scientists tell us, that there is a progressive decline and deterioration in the mental vigor and physical stability of our people? We have to thank for it these errors that exhaust the life of the fathers and mothers of coming generations, to convert it by a base alchemy into present gold,—a gold that, by and by, like that of the Phrygian king, will be all there is to offer as bread, as homes, as armies, as thought-power and as happiness. The hours of labor are too long. Not too long to earn a living in, for they barely suffice, as things now stand, for the purpose, but too long for the proper physical good, mental culture and moral growth of those involved. The proper physical good is especially our concern. If the co-operative system of labor ever reaches a general result as favorable as that its individual successes would warrant a hope of, we believe there will be both time and an inclination (not existing at its best in a worn body and tired mind) to regard those questions of personal cleanliness, diet, clothing, hygienic surroundings

and physical development, now so sadly disregarded by the working-classes, wherever found. An hour more in the morning for the young and forming female (and that is where it may be most advantageously gained, as all labor investigators agree), would save the necessity of ill-cooked, hurriedly-eaten, badly-digested breakfasts (made on hurriedly-prepared food, in which tea holds a prominent place), unwashed faces, neglect of nature's calls, hurried passage to the place of employ, and a disturbed, dissatisfied and fermenting body and mind, stomach and brain. Get a right appreciation and *adoption* of the true relation of these things into the mind and *lives* of working-people, and half the complaints that now arise, like those from the Israelites in the desert, will cease, as did theirs, with the right use of the manna from heaven. An advanced intelligence and humanity is yet to recognize, moreover, the adaptation, not only of the right strength, but the right hours of employ, at the various processes of labor. There are occupations at which a Hercules has no right to labor a full day, and they should be graded as such, and others in proportion; the hours of labor being adjusted for the labor, just as the strength of the individual should be adapted to it.

We do not seek to raise a nation of effeminate or *dilettanti*, nor do we wish, on the other hand, to make the land a hospital for worn out, debilitated, dyspeptic, chlorotic, anæmic, unsexed men and women. Shorter hours of labor, better improved, on better systems of the divisions of profits, may be, to some degree, at least, an antidote.

We sadly neglect the measures that are adaptable to insure a correct sanitary condition of our operatives during their labor. Of this the proof is in every workshop, salesroom and office in the land. Every occupation proves it, and the diseases and mortality registers make it indisputable. What can be done to remedy this general neglect, and what to meet, with special preventives, the specific dangers of definite occupations? There can be but two ways in which either the general or the detailed ills of this nature can be met. They are, the diffusion of sound intelligence bearing thereon, and the enactment and enforcement of efficient repressing law. The dissemination of intelligence, to a degree that shall

cause sex to be recognized in labor, a fitness of things in the apportionment of occupations, both as to strength and time; that shall convince legislators of the necessity of laws and their enforcement in these directions; that shall demonstrate to the employer the certainty that every draft he makes upon the vital forces of by and by, must be paid out of his children's pockets and their lives;—*such* a dissemination is, at once, the most powerful and the slowest-growing of influences. Much of it, however, must exist before the second influence—legislation and its execution—can be established. So long as men are prone to consult their own selfish interests; so long as the present is a greater reality than the future in the eyes of men, the simple *existence*, in partial recognition, of principles which, however vital they may be, are found to be at variance with men's interests or to deal largely with the future, will not be sufficient to command the respect they intrinsically demand. It becomes necessary that the minds that do recognize, what other minds would recognize but for their blinds of self-interest and distance, must bring into operative force the principles that should prevail; and this can be only through the medium of law.

It is hence essential, that such enactments should be made and prosecuted as shall best establish the condition of things that should be; and it is to such well considered and efficient enactments that we must look for the prevention of much that now affects, most unfavorably, the condition of working-people, and, especially, women and children. Provision for the due inspection of and inquiry into the real conditions of labor is naturally indicated as the initial desideratum of such law, and, in this Commonwealth, is especially necessary. While, in a measure, this bureau meets the need of our inquiry into the conditions, there exists no power of remedy (except in a very limited degree), only in so far as it may arise from the development of the truth concerning the ill-conditions of labor. What is needed, is the existence of inspectors of labor concomitants, with laws sufficiently regulative of those conditions, and power in the inspectors, acting under those laws, to maintain them as they should be. But, inasmuch as the inspector, without law to establish what is evil and what good, is useless, though with it most potent, the *law* becomes

the chief agent in the work of reform ; and it is to the creation and the subsequent execution of these laws that we must look for an improvement.

To frame laws to meet the demands of the principles we have recognized, under all their varying conditions, is not a task for this space, or one to be readily accomplished ; but we may fairly consider, in brief, some of the ends it is specially desirable should receive the appreciation of the public in general, and the employer in particular, and, it is to be hoped, will eventually find their recognition in law. We believe—

That the employment at labor of any girl under fifteen years of age should not be allowed.

That the employment of girls of other ages—and women generally—at employments unsuited to their sex, should not be suffered (such employments being determined by a council of salubrity, in France, composed of those most eminently fit for their high commission).

That in such employments as women should be admitted to, they should be permitted a "periodical absence," without pecuniary loss for such time as might be just and necessary.

That in employments where women should be admitted, and which require high degrees of mental concentration, with physical energy, additional vacations of sufficient extent should be the right of the employé.

That in all employments it should be obligatory upon the employer to conduct the processes of the occupation under the most advantageous conditions to health, and to secure all improvements in this regard that may become approved.

That in all larger manufactories (of over certain numbers of employés) there should be special sanitary supervision, at the expense of the proprietors.

That there should be a well-established examination and certification of all employés, male and female, proposing to

engage in any deleterious or burdensome employ,—only those being certified who are found in the possession of health not to be unduly impaired thereby, and only such to be employed as are certified.

That the worker herself may, by the exercise of recognized precautions, by personal attention to, or avoidance of, conditions unfavorable to health, and the cultivation of personal habits that aid the promotion thereof, do much to lessen the evil influences of labor, there can be no doubt. It behooves the state, therefore, to stand *first*, as the legal protector of its most weighty interests, its perpetuity and progress; and *second*, as the patron and promoter of whatever will aid therein. It has been deemed wise to stimulate, from time to time, special thought and inventive genius in aid of agricultural or commercial interests by the promise of large pecuniary rewards. What more legitimate, or more desirable, than that the Commonwealth should use every spur to bring to the lives and health of its inhabitants every device by which they may be additionally secured or promoted? If it be advisable to offer large rewards to him who shall discover the prevention of rot in the potato, (an article of food of comparatively small value, physiologically considered), and to bestow a prize of due proportion for "the best essay on the building of roads," how much more so for the creation of agencies that shall lessen the dangers of dust in factories, of injury from machinery, of fatiguing labor at the sewing-machine, the telegraph-instrument, and the type-case, and free from their baleful force the foul vapors of our noxious trades. In nothing can the state more surely seek its riches, for he who thinks, must accept the precept of Emerson, that "the first wealth is health."

PART III.

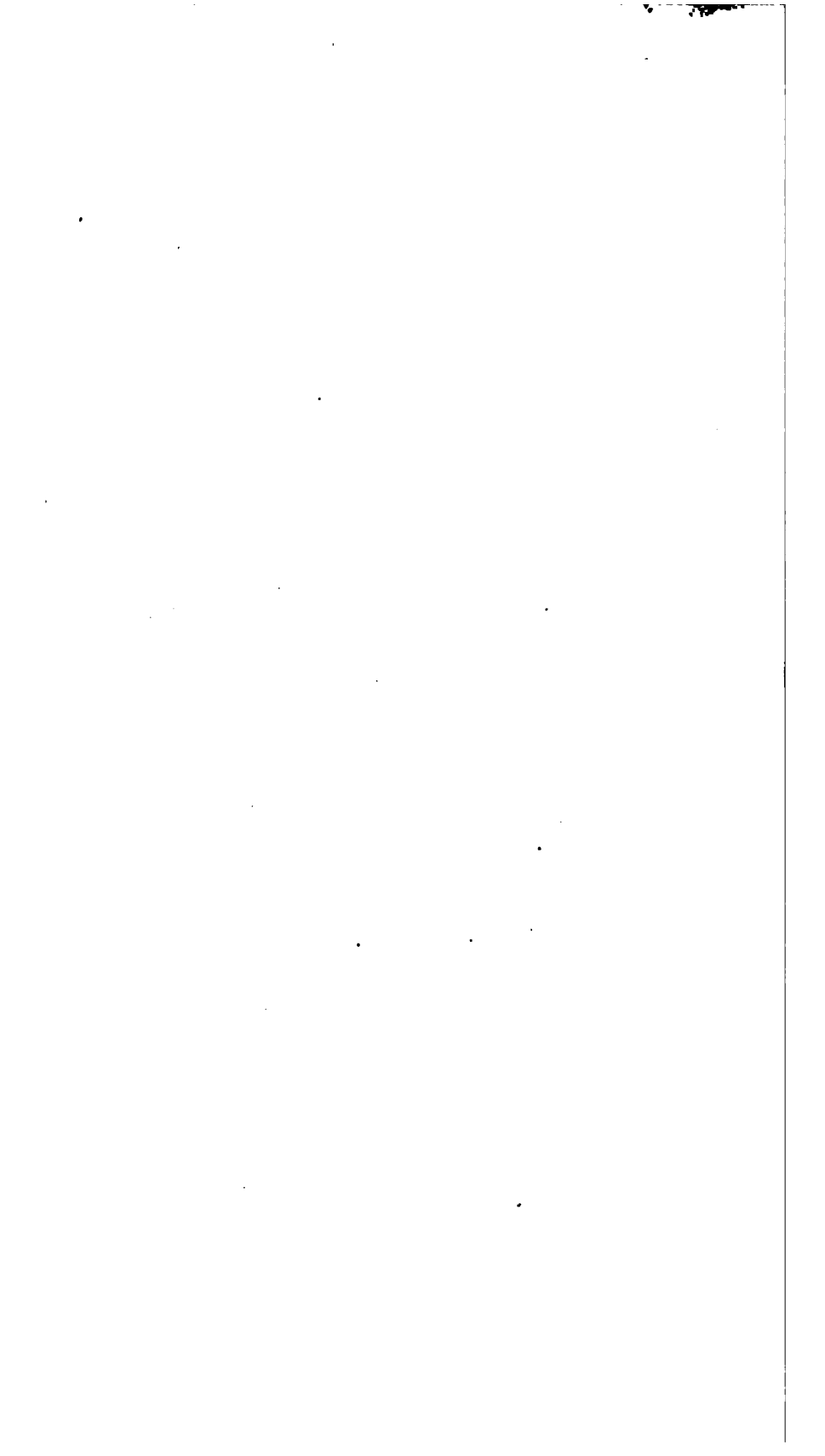
FACTORY LEGISLATION.

CHAP. I.—CHRONOLOGICAL HISTORY OF ENGLISH FACTORY LEGISLATION.

CHAP. II.—THE DISASTER AT GRANITE MILLS.

CHAP. III.—STATISTICS REGARDING UPPER STORIES OF MILLS IN MASSACHUSETTS.

CHAP. IV.—DOES MASSACHUSETTS REQUIRE A SYSTEM OF FACTORY LEGISLATION? —RECOMMENDATIONS.



PART III.

FACTORY LEGISLATION.

This part of our report is intended to present the needs which exist for legislation for the protection of operatives. The first chapter gives a clear idea of the progress of English enactments in this direction, and naturally suggests the question, whether we, in this state, require any thing of the kind ; while in chapters II. and III. are presented facts which bear upon certain existing evils ; and it is upon these chapters, taken in connection with Part V. of the report of 1874, that we have based chapter IV. of this part ; and we believe the facts abundantly warrant the conclusions which will be found in the last division of this part, and that the draft of a factory act there presented accords well with the condition of things as we have found them, and that no reason exists why such an act should not be fully enforced ; and further, that such an act would greatly assist those mill-owners who strive to protect their employés, and would tend rapidly to place the older and poorer mills on the same footing.

CHAPTER I.

CHRONOLOGICAL HISTORY OF ENGLISH FACTORY LEGISLATION.

The oldest English law which looked at all to the melioration of the condition of working-people was that of 1788, which took the parish orphans employed as chimney-sweepers under its protection. 1788.

A board of health was appointed in 1796, who, in their first report, plainly pointed to the crowding of workmen in factories as the direct and chief source of such epidemic fevers as prevailed at Manchester and other manufacturing districts. Nothing, however, was done until Sir Robert Peel carried the so-called "Moral and Health Act" of 1802, usually known as the elder Sir Robert Peel's act, which was the first law enacted with the object of regulating the period of labor in factories. The immediate cause of passing this bill was the fearful spread, throughout the factory district of Manchester, of epidemic disease, which made terrible havoc among the youthful laboring population, who were housed in crowded buildings, and kept to long hours of labor. The work was carried on day and night, without intermission, so that the beds were said never to have become cold,—one batch of children resting while the other batch went to the looms,—only half the number of beds being provided for all.

This law simply dealt with the unregulated employment of apprentices. By its provisions, the employer was compelled to clothe his apprentices, whose work was limited to twelve hours a day. Night-work was entirely prohibited, with the exception of some temporary regulations in respect to large factories. Every apprentice had to receive daily instruction during the first four years of his time, school attendance to be reckoned as working-time. Religious instruction on Sundays was distinctly regulated, and some useful sanitary clauses were inserted. Justices of the peace had to appoint two visitors to report at the quarter-sessions, and in cases of urgency, to provide for all sanitary requirements. This well-digested law, in a great measure, proved inoperative, through want of the necessary provisions for carrying it into effect, and the still undetermined state of the new manufacturing system.

Sir Robert Peel, again demanding that legal protection should likewise be granted to those children whose parents resided in the neighborhood of factories supplied with steam-power, into which such children were admitted, without participating in the protection provided by the

Apprentices Act, obtained the appointment of a Commons committee to consider the matter.

This was the first inquiry instituted by parliament with regard to the condition of the factory population. The evidence afforded, for the first time, a circumstantial and eloquent description of the injurious action of factory labor on children, and of the grasping efforts of parents to derive profit and income from the children's wages, while pointing to the inefficient working of the protective enactments hitherto in force.

A new law, applied exclusively to cotton mills, and not, like the former of 1802, to both cotton and woollen factories, was enacted, after the bill had been submitted to the con- 1819. sideration of a committee of the upper house. This act limited, for the first time, the age at which children might be admitted into factories, viz., nine years, and restricted to twelve each day the hours of labor, for children from nine to sixteen years of age, — this being exclusive of meal-time: one hour and a half per day. The number of hours per week was fixed at seventy-two, night work being once more prohibited. For the first time, also, rules were laid down to compensate for extra hours' time lost through accidental intermission in consequence of scarcity or excess in the supply of water-power, at the rate of an additional hour per day. Several supplementary statutes were afterwards added to this act, conceding to the owners of such cotton mills as had been destroyed by fire, or damaged by some other casualty (providing they were in possession of other factories in active operation at the time), the privilege of employing in the latter, during night-work, the hands thrown out of the former in consequence of the accident, and of appointing the meal-time at any period of the day that might best suit their convenience.

The attention of parliament having again been called, by Mr. Nath. Gould, to the condition of factory children, the famous radical member, Sir John Cam Hobhouse, 1835. (subsequently Lord Broughton), carried a more comprehensive bill, which, while repeating most of the former provisions, was the first to shorten the Saturday labor, and to stipulate special and detailed penalties against the transgress-

ors of the law, the carrying out of which was farther simplified and facilitated by the statute, 10 Geo. IV., c. 51.

In immediate connection with the first stage of a movement for the introduction of a ten-hour bill, agitated 1831. by certain workmen, radical Tories, and philanthropists, and headed by Richard Oastler (the renowned factory king), Hobhouse brought in a bill to reduce the working-time of the whole textile industry to eleven hours and a half; but owing to the energetic opposition of the woollen manufacturers of Yorkshire, it fell through, and only a statute, although an important one, was passed, limited in its application to the cotton industry, which repealed the four previous acts, prohibited night-work to all persons between nine and twenty-one years of age, and fixed the time of labor for persons under eighteen, at twelve hours per day, and nine on Saturdays (*i. e.*, sixty-nine hours per week). The recovery of lost time was facilitated, and night-work permitted in this respect, even to persons from sixteen to twenty-one years of age. All cotton-mill owners, as well as their parents, brothers and sons, were disqualified from acting as justices of the peace in cases of infringement of the law.

This was virtually the first factory act which was, at least to some extent, carried out, and which gave rise to still farther agitation. Despite the law, most factories worked thirteen hours, and numerous cases of infringement were subsequently brought to light. Out of several children of the legally determined age, one only was dismissed the factory after twelve hours' work, the remainder having to do overtime. In many cases the men were compelled to subscribe to a fund, out of which the manufacturer paid the fines incurred by him for breaking the law, which seems to have been better observed in Scotland than in England, and in the latter kingdom more so in town than in country districts. In Manchester, for instance, an association of cotton-spinners was formed, who, in order to prevent competition on the part of the manufacturers working overtime, proceeded on their own joint account against all who infringed the law, thus securing uniformity in regard to working-time.

A bill, limiting to ten hours of labor for persons under eighteen years of age, and extending this legal protec-

tion to wool, flax and silk factories, was brought in by Tom Sadler, the new parliamentary leader of the agitation.

This bill, on its second reading, was met by a storm ^{1832.} of opposition from the manufacturing members, who, under pretext of insufficient information, stopped its farther progress through the House. Sadler was compelled to yield. A special committee was appointed to examine witnesses and collect professional evidence on the bill, but no formal report was drawn up. The questions put by Sadler furnished the most glaring proofs of the injurious effects of the system upon the health and morals of the youthful factory population. At the end of the evidence of the witnesses, Sadler appended several mortality lists, in order to prove that in the factory districts, properly so-called, about as many people died under the age of twenty as in other places before the age of forty years. The witnesses belonging to the working-classes, were chiefly wool-spinners from Yorkshire, enjoying no legal protection whatever, and a very few only were from the cotton districts. The principal evidence as to the baneful influence of factory labor, was elicited from numerous medical men, who absolutely declared the youthful frame could not contend against more than twelve hours' labor. And then a cry was raised throughout England, and echoed all over the Continent, at sight of the sufferings so graphically described of the poor little factory children, compelled to slave under a cruel treatment from thirteen to fourteen hours a day, of young girls more wild than civilized, and of the apathetic exhaustion of men grown old at thirty.

On the reassembling of parliament, Sadler not being returned, Lord Ashley (afterwards Lord Shaftsbury) once more brought in, without delay, a ten-hour bill, which, if not expressly, yet by its tenor, restricted the hours of labor, even in the case of adults, to ten hours. The House declared that it intended in no way regulating the working-hours of adults, who, as such, were free subjects, and at liberty to act as they thought fit, and decided that a royal commission should be appointed to institute a new and comprehensive inquiry into the condition of factory laborers. The appointment of this commission had not only for its object the collection of fresh materials for the legislature, but the commissioners

were also "instructed" to present a more favorable report of the state of the factory population than did that of Sadler's committee the year before. The labors of the commission were proceeded with much more systematically than were those of its predecessor, and the numerous and valuable materials gathered together were prefaced by an elaborate report, in which the commissioners, in accordance with the unanimous testimony of the masters, looked upon the reduction of the working-day to ten hours as a ruinous and impracticable measure, at the same time that it constituted a dangerous encroachment on the rights and liberties of adult workmen. They, however, admitted something must be done for the children, whose sufferings were so forcibly described in the medical reports, and for whom even ten hours' work was considered too great an exertion. The report, therefore, proposed to reduce the time of labor for children, from nine to thirteen years of age, to eight hours. In order to obtain the requisite number of such hands during the whole of the working-day, it was proposed, for the first time, to divide the labor in such way that the children who had worked their eight hours were to be relieved by fresh batches. This was the actual breach in the provisions of the ten-hours bill, whose chief object was the establishment of a working-day of equal duration for all persons employed in factories. This almost entirely new idea was unpopular alike with the workmen and manufacturers. The opponents, as well as the supporters, of the ten-hours bill, were, therefore, more favorable to the adoption of a more advanced age for admission, rather than to the introduction of the double working-divisions for children of an early age. This very relay system, at first condemned by all as impracticable and ruinous, has become one of the principal features in the development of the English factory legislation, forming, as it does, in connection with compulsory schooling, one of the chief advantages of the present system. The report was particularly in favor of the new system. During the time when children would be excluded, other children or adults would be taken on, and thus, under every circumstance, would the increase of wages be profitable to the workers. Only those parents who derived an income from their children's wages would, properly speak-

ing, have a direct interest in the continuation of the hitherto prevailing long-hours system, since manufacturers would alone be affected by an increase in wages, and that only in an imperceptible degree. The school regulations could only be practically observed by the adoption of the relay system, the attendance of the tired children at Sunday and evening classes having been hitherto productive of the most unsatisfactory results.

Lord Ashley's ten-hour bill, owing to the introduction therein of a penal clause, was brought to grief, and the whig government, which beheld with satisfaction ^{1833.} the failure of the tory bill, now carried one of their own, in which most of the propositions of the royal commissions were transformed into legal provisions.

The new law of August 29, 1833 (quoted as Lord Althorp's Act), prohibited night-work (between the hours 8.30 P. M. and 5.30 A. M.) to all persons under eighteen <sup>1833.
August 29.</sup> employed in cotton, wool, worsted, hemp, flax, tow and linen spinneries and weaving-mills, and for the first time made a distinction between children from nine to thirteen years of age, and so-called "young persons," from thirteen to eighteen, fixing the maximum number of hours at forty-eight per week, or nine per day for the former, and at sixty-nine per week, or twelve per day, with regard to the latter. In silk factories, however, children under thirteen years of age were allowed to work ten hours per day; also, to be admitted before the age of nine. Daily attendance at school for at least two hours, as well as two entire and eight half holidays in the year, were likewise provided for. Certificates as to age were no longer to be given by the parents, but by a physician or surgeon; and, for the carrying out of the law, four factory inspectors were appointed, to whom a penal jurisdiction was delegated, concurring with that of the justices of the peace. This law has not been formally repealed; but most of its provisions, especially those relating to penal proceedings and administrative action, have been modified by the Factory Act of 1844.

It provided that the reduction of the working-day to eight hours, for children under thirteen years of age, should not come into force until March 1, 1836.

The inspectors, during the first years, reported numerous infractions, which, however, were not all punished, as their right to lay an information in such cases expired within fourteen days, and as, contrary to Sir J. Hobhouse's Act, which was repealed by the new Factory Act, even manufacturers might now exercise the functions of justices of the peace whenever the law was infringed. The duties of their office were performed in a most partial manner, and unprincipled employers found it more profitable to infringe than to obey the law. The greatest discrepancies and irregularities resulted from the use of certificates in regard to age, as they were only to be given on an estimate of the outward appearance of the individual; height was, therefore, established as a standard for age. This estimation of the age by the height of the child, led to the creation of spurious certificates, and parents did their utmost to qualify their either too young or too diminutive children for admission into the factory. Very often they brought before the medical officer older children instead of their brothers or sisters intended for admission, or they stuffed cotton into the stockings of the children so as to make them appear taller.

The condition of lace manufactories occupied the attention
1832. of the royal commission of 1833.

Lord Althorp's Act [3 & 4 Will. IV., c. 103], August
1834, 29, 1833, explained and amended in two important
Feb. 20. points by 4 Will. IV., c. 1, February 20, 1834.

The statute 4 & 5 Will. IV., c. 35, July 25, 1834,
1834. prohibited the engagement of chimney sweepers' ap-
July 25. prentices under ten years of age, and prescribed building regulations respecting the obtusion or rounding off of the chimneys.

The factory inspectors, partly intimidated and partly persuaded by the manufacturers, were induced to propose to government, in August, 1835, that a supplementary bill might be introduced, allowing children of eleven years of age and more to work twelve hours a day, or sixty-nine hours per week.

The president of the Board of Trade, Mr. Poulett Thompson, thereupon brought in a bill, in 1836, proposing
1836. to amend the eighth clause of the Factory Act of 1833,

and thereby despoil 35,000 children, between the ages of twelve and thirteen, of the protection they were legally entitled to. This bill was adopted by a majority of only two votes, and government was compelled to withdraw the former, and to let the Factory Act formally take its course, although aware that its practical enforcement would not produce the desired results.

In the same session, S. Hindley, at the instance of Oastler, brought in a bill, reducing the time of labor and restricting the working of the machinery to ten hours. But the bill did not even reach a second reading.

The employers, considering the fixed time of working too short for their interests, endeavored to keep their machines going longer within the legal working-day,—and this they could only achieve by establishing relays which commenced work at different times of the day, so that formally the legal working-time of those individually under protection was not exceeded. In these complicated combinations of the different hours into which the several periods of labor were divided, the excess of work done by protected persons obliged to stay in the factory during the whole working-day, in order to take their turn, was very difficult to prove without their own testimony; and the factory inspectors unanimously declared, so long as the employers had the power to work relays, to fix irregular meal-hours, and to continually alter at pleasure the working-time of every individual, no legal restriction could be enforced against their will. The inspector obtained a legal opinion from the law officers of the crown, according to which no part of the legally allowed meal-time was permitted to be taken; but the Home Secretary suffered the contrary practice to prevail.

The manufacturers, unable to arrange the work of the children, as they could of the young people, in such a way that the reduction of their working-time should impede as little as possible the manufacturing process, obviated the difficulty by the wholesale dismissal of the children, and the employment of "young persons" or machines in their stead.

A committee of the House of Lords sat to consider on the treatment of chimney sweepers' boys, and the statute 3 & 4 Vict., c. 85 (August 7, 1840), was ¹⁸⁴⁰⁻ passed.

A parliamentary committee, under the presidency of Lord Ashley, published a report from the commission on the
 1840. Act for the regulation of mills and factories, etc., containing only the evidence of witnesses and a well-arranged register.

The actual report, published in 1841, testifies the undoubted improvement in the condition of young factory workers, since the last inquiry, and advanced several propositions for a more effective execution of the law, many of which propositions were adopted in the Factory Act of 1844.

In 1840, government having withdrawn the draft of a fresh supplementary law to the Factory Act, Lord Ashley
 1840. obtained the appointment of a royal commission for the purpose of inquiring into the condition of the young people employed in mines and other industries, not under legal regulation, or so-called "free" industries.

The report of this commission (Children's Employment Commission, 1 Rep. Mines, Parl. Pap. 1842, xv., 281
 1842. pages, at present the most extensively known of blue-books of the kind) disclosed the most revolting abuses, and unfolded one of the darkest pictures of the material and moral misery and depravity of this class of the laboring population.

On the basis of this report, Lord Ashley introduced a bill with the object of excluding women altogether, and boys under thirteen years of age from underground work in mines, and of cancelling all apprenticeship indentures; but he failed in securing legal sanction for these propositions.

The Mining Act (Aug. 10, 1842), though it prohibited underground work by women, in general, and by boys
 1842. Aug. 10. under ten years of age, left the existing indentures in force till the apprentices had reached the age of eighteen, and permitted in future, contracts to be entered into for a term of eight years for new apprentices ten years old. The payment of wages in public houses was prohibited, and wages so paid could be claimed over again by the workmen. Government was empowered to appoint mine inspectors to report on the observance of the law, but they were not invested with such extensive authority as the factory inspectors. The Act contained no clause restricting the time of labor or pro-

hibiting night-work, no directions for school attendance and certificates of age, and was therefore beneficial, to the mining population, only by the prohibition of female and children's work, although the immediate exclusion of the numerous class of female workers from mines produced much temporary distress, especially in the eastern parts of Scotland.

The condition of lace manufactories occupied the 1842. attention of the royal commission of 1842.

A very instructive inquiry on the mining-workers of a single district, was published in 1843. Report of the Midland Mining Commission (South Staffordshire), 1843. Parl. Pap., 1843, xiii., 306 pages.

The children's employment commission published their second report on the condition of young laborers in those branches of industry, not as yet under the operation of the Factory Act, and revealed a terrible state 1842. of things and abuses in those "free" industries; but as no powers to do so had been delegated to them, they proposed no reforms, and the sufferings of these people remained without legal remedy until 1864, when the first Factory Extension Act was passed.

The difficulties of carrying out the Factory Act of 1833 induced Sir Robert Peel's cabinet, in 1844, to bring in a bill respecting the industries subject to that Act, and 1844. Sir James Graham proposed on the 5th of February, that it should not be allowed to work children from eight to thirteen years of age longer than six hours and a half a day; that the general working-day for children and young persons should be from 5.30 A. M. to 7 P. M. (6.30 A. M. till 8 P. M. in winter); and that the recovery of lost time should only be allowable in mills worked by water-power. Lord Ashley recommended that the night hours, during which protected persons were prohibited from working, should commence as early as 6 P. M. The ministry and the manufacturers opposed, but Lord Ashley's amendment was carried. The House rejected both limits of twelve and ten hours as the period of labor. The government brought in a new bill, omitting the clause respecting the hours of labor. Lord Ashley again proposed to restrict the working-hours for young persons to ten, to commence in October, 1847. Sir Robert

Peel opposed this clause, and, threatening to tender his resignation, he succeeded in obtaining the rejection of Lord Ashley's amendment by a vote of 297 against 159.

The Factory Act of June 6, 1844, reduced the working-time of children of eight (no longer nine) to thirteen ^{1844,} years of age employed in the textile industry (in _{June 6.} silk-throwing mills children of eleven years of age were allowed to work ten hours daily, and were not compelled to attend school) to six hours and a half per day (from 5.30 A. M. to 8.30 P. M.), and no child occupied in the morning was allowed to work in any factory on the same day after one o'clock, P. M. Those factories where the labor of young persons was restricted to ten hours a day, were also allowed to employ children for ten hours, but only on three alternate days of the week. All adult females were placed under the same legal protection as young persons; and it further regulated the legal working hours and meal times for children or young persons; provided that children should be sent to school for at least three hours daily during the first five days of the week; in winter, two hours and a half in the afternoon; children who worked ten hours on alternate days to attend school for five hours on each non-working day; required certificates for school attendance from the manufacturers, and surgical certificates of age and bodily ability from physicians (or surgeons) appointed by the factory inspectors; regulated the fees and duties of medical examiner; determined the powers and duties of factory inspectors and sub-inspectors; laid down certain legal presumptions for greater facility in establishing evidence; determined the responsibility of masters and others; imposed fines and punishments; and provided for the reception and execution respectively of the same.

The calico print-works had been especially designated by the children's employment commission as among the most injurious to children. Long work, often lasting till very late in the night, in hot, unhealthy rooms, a total want of instruction, and low wages, made the lot of young calico-printers one of the most miserable of the whole industrial population. Lord Ashley, therefore, brought in a bill the following year for their protection. The law adopted in consequence

(Print-works Act, June 30, 1845) contained provisions ^{1845,} closely akin to those of the Factory Act of the previous ^{June 30.} year. It prohibited night-work (between 10 P.M. and 6 A.M.) by women and children, but not by male young persons, the legal definition of whom reached only—contrary to the law of 1844—to the sixteenth year of age; and it contained no sanitary directions, nor any regulations as to the duration of labor and meal-time. Just as defective were the school regulations; and the schooling of these print-works children was, by reason of its irregularity, totally ineffective; and all reports of school and factory inspectors confirmed from year to year the unexampled ignorance of these children, who went to school at arbitrarily irregular intervals, merely in order to complete the legally prescribed one hundred and fifty hours, but without learning anything thereby.

The carrying out of the Factory Act of 1844 succeeded much better than its opponents had predicted. The chief difficulty consisted in procuring the larger number of children required by the half-time system. But, in course of time, manufacturers reduced their number of children, on account of the onerous school and register regulations, and the discharged children were replaced by machinery and adult females, who performed the work of several children.

A short Act (9 & 10 Vict., c. 40, Aug. 3, 1846) was passed exempting all cord and rope factories, not ^{1846,} attached to flax-spinning mills, from the operation ^{August 2.} of the Factory Act.

Although the results of the Factory Act satisfied the promoters of this protective legislation to a certain degree, the old adherents of a ten-hour bill did not give up their agitation in favor of a reduction of the time of labor for young persons and women; consequently Mr. J. Fielden, who had already unsuccessfully proposed a ten-hour bill the year previous, again brought in a bill in 1847, which ^{1847.} limited the time of labor for all young persons and women to eleven hours a day, or sixty-three hours weekly, at once, and from May 1, 1848, to ten hours and fifty-eight hours respectively. After a short but sharp opposition in the House of Commons by Sir Robert Peel, supported by

the "manufacturing interest" in the House, the bill, which government had only reluctantly countenanced, was carried, and its first provisions came into force, on the first of ¹⁸⁴⁷ June 3, July, as 10 Vict. c. 29, (June 8, 1847); all other provisions of the Factory Acts of 1833 and 1844 remained in force.

With this law, the object of a nearly twenty years' agitation appeared to be accomplished, and, as according to the returns of 1847, out of 544,876 workmen (the total number employed in the textile industry), 363,796 had to be classed under the designations of young persons and women, its importance was much greater than that of the previous Factory Acts, which referred chiefly to the curtailment of children's labor. The commencement of the operation of the new law coincided with a great commercial crisis, which compelled numerous manufactories to stop working, or to work only on half time. The reduction of the wages, in the year 1847, is, therefore, to be ascribed, not so much to the new law as to the general stagnation of trade. With the revival of production, which took place simultaneously with the adoption of the ten-hours working day, there arose a tendency among the manufacturers to keep their establishments longer at work during the legal working day; and this they endeavored to accomplish by the re-introduction of the so-called relays of young persons, who commenced and left off work at different hours, a system which had been put an end to by the Factory Act of 1844 (sect. 26), thus completely eluding the very object of the ten-hours bill. The inspectors, therefore, laid numerous complaints against the manufacturers who worked "relays." The justices of the peace, mostly belonging to the manufacturing class, as a rule, acquitted the employers, and the application of this law was constantly set aside. In order to obtain a generally valid decision on the interpretation of the Act, the inspectors brought an action before the Court of Exchequer, which, on the eighth of February, 1850, decided that the practice of the alternate relays (shifting system) was legally admissible. It was to be feared that this wrongly designated "relay system" would extend itself to all industrial districts (in Lancashire the relay system was, with a few local exceptions, still in the minority) if, on the repre-

sentations of the factory inspectors, the legislature had not interfered, to secure and further develop the principle of the factory legislation, by the establishment of a uniform working-day, which should afford the protected person a reasonable leisure time after leaving off work.

This was accomplished by 13 & 14 Vict., c. 54 (August 5, 1850), which provided a new limitation of the working-day, and now made it fully consistent with the legal <sup>1850,
Aug. 5.</sup> working-time (including the time for meals), and in this sense there exists now, but only since the year 1850, an actual *normal working-day*, with equal hours for commencing and leaving off work, and pauses for rest.

The law, by its clear and distinct provisions, put a speedy and lasting end to the uncertainties and agitation that existed in the manufacturing districts, and met with less resistance and ill-will than had been expected.

The Act of 1850, which up to a recent day regulated the working-time of the majority of the factory laborers, applied only to the persons protected by it, and left the work performed by children from eight to thirteen years of age still under the operation of the Factory Act of 1844. To adapt the children's working-day to that of the young persons and women, the legislature soon took another step in advance, and prohibited, by 16 & 17 Vict., c. 104 (August 20, 1853), the employment of children before 6 o'clock <sup>1853,
Aug. 20.</sup> A.M. and after 6 P.M., maintaining, however, the proviso of the previous Act in reference to change of time in winter months, and extending the hours for extra work to 7 P.M. in factories worked by water-power.

With this law, the placing of legal restrictions upon the working-time, for the great textile industry, properly so called, for a while ceased. Manufacturers, as a whole, submitted to the new order of things, and the factory inspectors reported the following year a pretty general observance of the law, and only complained seriously of the want of precaution, and of the danger arising from the insufficiently fenced-in and protected parts of the machinery, which, in spite of a special supplementary statute, 19 & 20 Vict., c. 38 (June <sup>1856,
June 30.</sup> 30, 1856), was not removed.

Another very frequent infringement of the law consisted

in the practice followed by many manufacturers of working their machines each time at the respective commencing and closing hours during the day for some minutes longer, thereby prolonging the usual period of labor. In order to rectify this irregularity, the legal supposition of the Factory Act of 1844 was not sufficient, and Inspector Horner drew up a memoir, with propositions for a reform of the law. (Parl. Pap., 1859 [Sess. 2], xxvii., p. 365.)

A committee of the Lords, in 1855, sat on a proposition for the restriction of the working-time for needle-
1855. women, but without result.

The next curtailment of the working-time applied to the *bleaching and dyeing works*, where long hours of labor in hot rooms (from 30 to 50 degrees centigrade), required particular regulation. The royal commissioner, who, in consequence of a bill proposed by Lord Shaftesbury, investigated, in 1855, the condition of the workmen employed in these works, advocated the extension of the factory legislation to these industries. (Parl. Pap. 1855, xviii. p. 148.)

1857. His report remained without result, and, in 1857, a committee of the House of Commons was appointed to take new evidence. (Parl. Pap. of 1857-1858, xi. p. 685.)

This committee reported adversely, and only in 1860 did the legislature take steps for regulating this industry, and

1860, Aug. 6. the statute 23 & 24 Vict., c. 78 (August 6, 1860), subjected all *bleaching and dyeing works* for cotton, silk, wool and flax (with the exception of those carried on in the open air) to the factory laws. This Act contained no provisions respecting meal-times, the fencing-in of machinery, etc., and was, moreover, one of the worst-framed English statutes.

The practical effect of this Act was an almost uninterrupted course of work till 8 o'clock P. M., under pretext of recovering lost time. By 25 Vict., c. 8 (April 11, 1862), it

1862, April 11. was forbidden to employ children, young persons and women at night (from 8 P. M. till 6 A. M.), except for recovering time lost during the day, without, however, placing them under the provisions of the Factory Act relating to working-hours, meal-time, school-attendance, inspection, etc. Subsequently, those factories in which, by the use of mechan-

ical power, the bleached and dyed materials were calendered, dressed and finished, were by the statute 26 & 27 Vict., c. 38 (June 29, 1863), subjected to the provisions of the Bleach-works Act of 1860. The Act 27 & 28 Vict., c. 98 (July 29, 1864), likewise extended the provisions of the Act of 1860 to those work-rooms in which the work was exclusively performed by manual labor, with the restriction that all those workshops in which only male persons above fourteen years of age were employed should not be subject to the operations of the above Act. This last law touched upon the boundary line of work performed in great manufactories and handicraft work, and its enforcement was fraught with great difficulties so long as the latter was entirely free from legal restrictions. At about the time when bleaching works were placed under the operation of the factory legislation, it was likewise sought to extend the application of the latter to lace manufactories, whose condition had already occupied the attention of the royal commissions of 1833 and 1842. These being greatly outnumbered by the shops where work was done by hand, could not then, in justice, be exclusively subjected to the legal restrictions. When working by hand became less prevalent, the question of bringing lace manufactories under the factory laws was revived, and in 1861 a new inquiry was instituted. Establishments in which lace was made, but not finished, had adopted a "relay system," the nature of the work necessitating frequent interruptions, or, to carry on the work uninterruptedly during the legal hours, requiring the use of a double quantity of bobbins. Parliament, not disposed to impose such a considerable outlay on this branch of industry, allowed the exceptional employment of boys above sixteen years of age between 4 A. M. and 10 P. M., limiting the actual working hours to nine per diem (24 & 25 Vict., c. 117, Aug. 6, 1861).

The excessively long working-hours in the unhealthy bakeries had already, before the year 1848, led to parliamentary debates, but without result, until the statute (26 & 27 Vict. c. 40, July 13, 1863) was established which prohibited the injurious night-work in bake-houses to persons under eighteen years of age between 9 P. M. and 5

A. M., without, however, fixing the time or extending the factory legislation to the journeymen bakers. The few hygienic regulations of this law were based upon the sanitary Acts, especially the Nuisances Removal Act, and their application was left to the respective local authorities and their public-health officers, and was excluded from the central control of government inspectors.

So far back as 1842, mines had been subjected to general regulations, and in the course of 1850 and following
Mines. years two supplementary laws were passed (13 & 14 Vict., c. 100, Aug. 14, 1850, and 18 & 19 Vict., c. 108, Aug. 14, 1855), chiefly providing, by increasing the number of inspectors to twelve, for a better supervision of the precautionary measures in coal-mines. It was only in 1860 that a new, comprehensive law (23 & 24 Vict., c. 151) was
1860. passed for *coal and iron mines*, which, considering the danger to human life arising from the peculiar mode of working them, referred to measures of safety, sufficient ventilation, shaft-timbering, etc. The real object of the factory legislation—to protect young persons against the injurious influences of too long working-hours—was only looked upon as of secondary importance, and did not entail heavy penalties. The provisions of the Mining Act as regarded school attendance, with a very few exceptions, remained a dead letter. The precautionary measures, on the other hand, which subsequently were still rendered more stringent
1862, August 7. (25 & 26 Vict., c. 79, August 7, 1862), were attended with pretty satisfactory results.

The beneficial results of the factory legislation to the operatives employed in the textile industry rendered an extension of its protective provisions to other branches of industry more and more desirable. Lord Shaftesbury,
1861. therefore, moved, in 1861, the appointment of a new royal commission for inquiring into the condition of the young laborers in those branches of industry not as yet under the control of the factory legislation, and for proposing suitable legislative enactments. This second great
1862 to 1866. commission labored from 1862 till 1866 to an almost complete exhaustion of the subject.

The commission first inquired into the condition of the

fetile industry (earthenware, porcelain, etc.), and found in the pottery districts of Staffordshire the workmen in a very unfavorable sanitary condition, in consequence of the long hours of labor in hot and badly, or not at all, ventilated drying-rooms, and the inhaling of flint-dust used for enamelling, as well as of the vapors of the metallic solutions employed for the same purpose. The commissioners, thoroughly convinced of the necessity and beneficial effect of the introduction of the factory legislation in this industry, at length recommended the extension of it, with all its provisions, to the pottery industry as well as to the matches and percussion-cap manufactories, in which a still worse sanitary state prevailed. At the same time an inquiry was instituted into the condition of paper-hanging manufactories. The commissioners would not give way to certain objections of the manufacturers, further than to grant exemption—during the immediate transition time—from the provisions relative to the simultaneous meal-hours for all protected persons, and recommended at the same time the extension of the entire factory legislation, without exception, to fustian manufactories, and they added the stringent proviso, that no child under eleven years of age should be admitted therein.

These, the first propositions of the commission, were the next session at once embodied in the statute 27 & 28 Vict., c. 48 (July 25, 1864), which subjected all <sup>1864.
July 25.</sup> *manufactories of earthenware, percussion-caps, lucifer-matches and cartridges, paper-staining and fustian-cutting*, to the general factory legislation, with the relaxing transitory provision that during the first six months, children of the age of eleven years, and during the next two years and a half after the passing of the Act, children of twelve years of age, were to be allowed to be employed as young persons.

A new provision was added concerning ventilation and sanitary regulations.

The commissioners, moreover, occupied themselves^{*} with *chimney-sweepers' boys*, who, notwithstanding repeated protective legislation, were employed in a barbarous manner as brooms for sooty chimneys. The proposition of the commissioners to adopt stricter legislative measures, and to ensure their observance by more stringent

Chimney-
sweepers'
Boys.

supervision by the police, were not adopted altogether in the new Act, 27 & 28 Vict., c. 37 (June 30, 1864), which <sup>1864.
June 30.</sup> again reduced the age for the admission of apprentices to ten years, and forbade persons under sixteen to climb chimneys, as well as to afford any assistance to chimney-climbers, without; however, in other respects, extending the protective provisions of the Factory Act to the boys. The next law of 1864 is likewise disregarded on account of the want of authoritative supervision.

The first introduction of the new, extending legislation, met, especially in the *pottery districts* of Staffordshire, with the same difficulties and objections as those experienced in 1833 and 1844. But when the stagnation of the trade, caused by the American war, was succeeded by a greater activity, many masters who had originally offered strenuous resistance to the factory legislation and predicted the ruin of the entire industry, declared that, notwithstanding the reduction of the hours of labor, the same quantity of goods was produced as before, on account of the regularity with which the daily work was performed, and that the salutary effects upon the health and morality of the formerly so decried pottery districts, could not be too highly estimated.

The applying of the Factory Act to *fustian-cutting* was just as auspiciously attended by an improvement in this trade. ^{Fustian-cutting.} So that the rise of wages, although produced by other causes, refuted the very apprehensions of a reduction of the amount of wages in the ratio of the reduction of the working time.

The Children's Employment Commission went on to examine other trades, which were still more behind the great manufacturing system than those regulated by the Act of 1864. These were the lace and hosiery manufactories,—especially those of Nottinghamshire,—millinery and dress-making business, shoemaking industry, tailoring business, hatters and glovers, metal (hardware) industry, machine manufactories, paper manufacture, glass-works, and other smaller trades.

The commission did not hesitate to recommend the extension of the factory legislation to the whole of the metal (hardware), paper and glass industries, with a few modifica-

tions rendered indispensable by the particular nature of these trades, and likewise to the other smaller trades inquired into by them, in all of which long and irregular working-hours in mostly unhealthy workshops, and want of education of the young laborers, were the prevalent features. The condition of the young laborers since the last twenty-five years having thus been once more the object of inquiry, it was found that, although it had undoubtedly improved since the year 1840, still a similar result was observable, viz. : that in respect to sanitary measures and length of working time, the children employed in the so-called small trades, were much worse off than those engaged in the great industries organized after certain rational principles, and that unfortunately it was their very parents against whom the children required to be mostly protected.

The English government, in 1867, attempted to codify the recommendation of the commission, and, considering the absolute extension of the minutiae of the provisions 1867. of the Factory Acts to all branches of industry as impracticable, saw no other way than, first, to distinguish between manufactories and workshops, and afterwards to pass separate Acts for them.

The first of these laws, the statute 30 and 31 Vict., c. 103 (Factory Act Extension Act, Aug. 15, 1867), applies to all *furnaces, iron and copper works, machine man- 1867,
Aug. 15. ufactories worked by machinery, metal (hardware), and gutta-percha factories, all paper-mills, glass-works, and tobacco manufactories, printing-offices and book-binders' shops;* and lastly, to all those establishments in which, in the course of a year, *fifty and more persons* are employed together at one and the same time for a period of one hundred days at least. As the new law stipulated numerous modifications which were not to be applied to the manufactories hitherto under the rule of the factory legislation, no uniform factory code was drawn up, despite the purported general extension of the existing legislative enactments to the industries newly to be regulated; but the process of special legislation was further developed, while the abortive special Act, relating to *print-works, lace manufactories, and bleaching and dyeing works*, was left untouched by the new Act. This law, as well as the subsequent

one, though it had been referred to a special committee, passed both Houses without opposition, and without any essential alteration (except that the number of workmen constituting a factory was reduced from one hundred to fifty).

With the second Act (30 and 31 Vict., c. 146, Workshops Regulation Act, August 21, 1867), the legislature entered on the more troublesome ground of the small trades and handicrafts, to which it had been found impossible to extend the stringent regulations of the normal working-day and fixed meal-times. In this juncture the question to be considered could only be that of uniformly extending to the young workmen and women the statutory protection against overwork; but even this general protection was not vouchsafed at the same rate to the persons employed in the same trade.

The penalties for the infringement of this Act are in general the same as set down in the Factory Act.

The extension of the protective provisions of this same Factory Act—which were originally passed only as a kind of exceptional legislation for a distinct branch of industry—to the whole mass of great and small industries, marked an extraordinary progress in modern legislation. For the first time it was thereby declared—for the whole extent of the United Kingdom—that all work done for wages by young persons and women should be placed under supervision and subject to distinct regulations.

The carrying out of the Factory Act Extension Act, for which purpose the number of the sub-inspectors was increased from twenty-five to thirty-nine, did not exactly meet with the same difficulties as the Factory Acts of 1833 and 1844. It was certainly not natural to suppose that the numerous trades which, since 1868, had been restricted by legislative enactments, would simultaneously cease to resist, and that there would at once ensue such a general and absolute application of the law as is now observed in Lancashire and Yorkshire. Thus, during the first years of this new order of things, the law was very differently obeyed. Matters, however, assumed a better aspect at the commencement of the following year, 1869, and the stringent manner in which the law was enforced, combined with the general feeling of the impossibility of an

alteration in the law, was remarkably quick in convincing a large number of employers that the adoption of a regular working-day, with uniform working-hours, would further the interests of the producers, and conduce, at the same time, to the general improvement of the working classes. The inspectors, at the close of this year (Oct. 31, 1869) and the next year (April 30, 1870), point with satisfaction to the increasing observance and approval of the Factory Act Extension Act.

It proved, however, much more difficult to force the observance of the second Act of 1867,—the Workshops Regulation Act,—the carrying out of which was left to ^{1867.} the local authorities, and which was stated, in the reports of the inspectors of 1868 and 1869, to be a dead letter throughout nearly the whole country. This widespread non-observance of the Workshops Regulation Act, together with the increasing effective operation of the other law of 1867 (on factories), brought a large number of children and young persons from the great manufactories into the small workshops, where the children's wages underwent no reduction; and, more especially, into those trades where both systems of manufacturing clashed with one another, and where the legal restrictions found a limit to their operation in the number of persons (fifty) employed in an undertaking.

The totally insufficient provisions of the Acts relating to cotton-print, bleaching and dyeing works could not possibly remain in force after the extension of the fac- ^{1870.} _{August 9.} tory legislation to all great industries, and after the regulation even of the workshops; and, by the statute 33 and 34 Vict., c. 62 (August 9, 1870), the principal provisions of the Factory Act of 1867 were extended also to these industries. The modifications were of a similar nature to those of 1867, in consequence of a permission of the Home Secretary in regard to the customs and requirements of the trade. All previous Acts relating to print and dyeing works were repealed.

The difficulties arising, through the local authorities, in the carrying out of the Workshops Regulation Act, and the pressure of the urgent recommendations of the fac- ^{1871.} _{August 21.} tory inspectors, induced parliament to pass, in the session of 1871, a final Act (34 & 35 Vict., c. 104, 21st

August, 1871), which completely transferred the duty of enforcing the provisions of that Act from the local bodies to the inspectors and sub-inspectors of factories, who were to embrace, in their reports, workshops as well as factories. This same Act subjects all government establishments to the Factory Acts, restricts the accident provision of the existing law, and grants further powers to the Home Secretary in regard to the time of young persons and of women employed in trades, depending, by the nature of their business, on the weather or on the seasons of the year.

The Act 34 Vict., c. 19 (25th May, 1871), provides
 1871. for the exemption of masters from penalties in respect
 May 25. to Sunday work by Jewish work-people.

A parliamentary committee having considered, in 1866 and 1867, the question of reforming the mining legislation,
 1872. and drafts of a new law having been submitted to the House of Commons, in 1869, 1870, and 1871, government, at the beginning of the last session (1872), brought in a new and comprehensive bill for coal-mining, by which it was intended partly to amend, partly to consolidate the former Acts.

In the session of 1872, a bill was brought in by Mr. Muddella and other members of parliament for a further
 1872. curtailment of the working-hours of the protected persons ;—all Saturday work to cease after 1 o'clock, P.M. ; a protected person not, except for recovering lost time, to be employed for more than nine and a half hours on any day, nor for more than fifty-four hours per week.

For the foregoing synopsis of the factory legislation of England, we are largely indebted to the work of Herr Von Plener, referred to in Part I.

In 1874, additional Acts were passed, the bearing of which, upon previous Acts, can be seen from the following abstract, which we copy from a late number of "*The Labour News*":

"The following is an abstract of the Factory Acts, 1833-56, as amended by the Factory Act, 1874, and now in operation:—

"The Factory Acts, 1833-56, as amended by the Factory Act, 1874, apply to factories of cotton, wool, hair, flax, hemp, jute, tow, silk and lace.

"No person under 18 can be employed until his or her name has been entered in the proper register.

"No person under 19 can be employed without a surgical certificate of age.

"No one may be employed (*a*) during the year 1875 who is under 9 unless, before January 1, 1875, he was lawfully employed in a like factory; (*b*) on or after January 1, 1876, who is under 10, unless, before January 1, 1876, he was lawfully employed in a like factory.

"During the year 1875 a child means a person who has ceased to be too young to be employed at all, but is under 13.

"After January 1, 1876, a child includes both of the following:—
(1.) A person who has ceased to be too young to be employed at all, but is under 13. (2.) A person who is over 13 and under 14, unless he either was lawfully employed before January 1, 1876, as a young person, or has obtained an official certificate of having passed the prescribed standard in writing, reading, and arithmetic.

"Young person means a person who has ceased to be a child, but is under 18. A woman means a woman who is over 18.

"The period of employment must be the same for all the children, young persons and women employed in the factory, and must be either between 6 A. M. and 6 P. M., or between 7 A. M. and 7 P. M., and cannot be altered, except after written notice to the inspector.

"The mode of employment of children must be the same for all the children employed in a factory, and either must be employment in morning and afternoon sets, or employment on alternate days, and cannot be altered, except after written notice to the inspector.

"When the children in a factory are employed by morning and afternoon sets, a child may be employed six days in the week; but

"When employed on one of the first five days of the week—(*a*) not except between 6 [7] A. M. and 6 [7] P. M.; (*b*) not for more than 4½ hours continuously without half an hour's interval for a meal; (*c*) not on the same day both before noon and after one; or if dinner is before one, not both before noon and after dinner; (*d*) not unless he attends school daily for three hours between 8 A. M., and 6 P. M., or between November 1 and February 28 for 2½ hours between 1 P. M. and 6 P. M.

"And when employed on Saturday—(*a*) not before 6 [7] A. M.; (*b*) not in any manufacturing process after 12.30 [1.30] P. M., or for any purpose whatever after 1 [2] P. M., or where the period of employment is between 6 A. M. and 6 P. M., and at least one hour on Saturday is given for meals, not in any manufacturing process after 1 P. M., or for any purpose whatever after 1.30 P. M.; (*c*) not for more than 4½ hours continuously without half an hour's interval for a meal; (*d*) not if on any other day during the same week he has been employed for more than five hours; (*e*) not if he was employed on Saturday in the previous week.

"When the children in a factory are employed on alternate days, a child may be employed three days in the week, but not on two successive days; and when employed on one of the first five days of the week—(*a*) not except between 6 [7] A. M. and 6 [7] P. M.; (*b*) not for more than 4½

hours continuously, without half an hour's interval for a meal; (c) not unless between 6 [7] A. M. and 6 [7] P. M. he is allowed two hours for meals, of which at least one hour is before 3 P. M. And when employed on Saturday (a), not before 6 [7] A. M.; (b) not in any manufacturing process after 12.30 [1.30] P. M., or for any purpose whatever after 1 [2] P. M.; or, where the period of employment is between 6 A. M. and 6 P. M., and at least one hour on Saturday is given for meals, not in any manufacturing process after 1 P. M., or for any purpose whatever after 1.30 P. M.; (c) not for more than $4\frac{1}{2}$ hours continuously, without half an hour's interval for a meal.

"Also a child employed on alternate days must attend school every alternate week day (except Saturday) for five hours, between 8 A. M. and 6 P. M.

"Young persons and women may be employed six days in the week; but, when employed on one of the first five days of the week, (a) not except between 6 [7] A. M. and 6 [7] P. M.; (b) not for more than $4\frac{1}{2}$ hours continuously, without half an hour's interval for a meal; (c) not unless between 6 [7] A. M. and 6 [7] P. M. they are allowed two hours for meals, of which at least one hour is before 3 P. M. And when employed on Saturday (a) not before 6 [7] A. M.; (b) not in any manufacturing process after 12.30 [1.30] P. M., or for any purpose whatever after 1 [2] P. M.; or, where the period of employment is between 6 A. M. and 6 P. M., and at least one hour is given for meals on Saturday, not in any manufacturing process after 1 P. M., or for any purpose whatever after 1.30 P. M.; (c) not for more than $4\frac{1}{2}$ hours continuously, without half an hour's interval for a meal.

"After 1st January, 1876, no child, young person or woman may be employed extra hours in the recovery of lost time.

"Children, young persons and women may not be employed on Christmas Day, Good Friday, or in Scotland on the Sacramental Fast Days. And besides they must be allowed in the course of the year eight half holidays, or four whole holidays, notices in each case being fixed up in the factory on the previous day.

"Children, young persons and women employed in the factory are all to have the same meal-times, unless in case of special exemption granted by the inspector, and during meal-times are not to be allowed to remain in any room in which any manufacturing process is being carried on, or to be employed in any manner in the factory.

"The occupier may deduct from a child's weekly wages, on account of the child's schooling, such sum as the inspector may appoint, not exceeding either 2d., or one-twelfth of such weekly wages. With respect to England and Scotland, after 1st January, 1876, attendance of a child at a school not officially recognized as efficient, will not count, except where there is not a school so recognized within two miles of the factory, or where the district in which the factory is situated has not been officially declared to be sufficiently provided with school accommodation.

"All mill-gearing and dangerous machinery must be securely fenced. No child, young person or woman may be allowed to clean any mill-gearing while it is in motion, or to work between the fixed and traversing

part of any self-acting machine whilst the machine is in motion. No child, young person, or woman may be employed where the wet spinning of flax, hemp, jute or tow is carried on, unless sufficient means be employed for protecting them from being wetted, and, when hot water is used, for preventing the escape of steam into the room.

“ All fatal accidents, and every accident from machinery or from explosion of gas, steam or metal, which prevents the injured person from returning to work within forty-eight hours, must be reported to the certifying surgeon.

“ Factories must be lime-washed once every fourteen months.

“ A parent, guardian, or person having the legal custody or any direct benefit from the wages of any child or young person illegally employed, or who neglects to cause such child duly to attend school, is liable to a penalty.

“ The following may be employed in the winding and throwing of raw silk as young persons:—(a) during the year 1875, any child over 11; (b) during the year 1876, any child over 12; (c) after 1st January, 1877, any person who immediately before 1st January, 1877, was lawfully employed as a young person.

“ A youth over 16 and under 18 may be employed in a lace factory between 4 A.M. and 10 P.M.; but (a) not for more than nine hours on any day when he is employed either earlier than 6 [7] A.M. or later than 6 [7] P.M.; (b) not both before 6 [7] A.M. and after 6 [7] P.M. on the same day; (c) not both after 6 [7] P.M. on one day, and before 6 [7] A.M. on the next day.”

“ [The above abstract applies equally, whether the period of employment is between 6 A.M. and 6 P.M., or between 7 A.M. and 7 P.M., except that, wherever a figure inclosed in brackets is placed immediately after another figure, the first figure refers exclusively to the case where the period of employment is between 6 A.M. and 6 P.M., and the figure inclosed in brackets refers exclusively to the case where the period of employment is between 7 A.M. and 7 P.M.]”

Factory legislation has exerted a most beneficial influence, and both workingmen and masters alike are generally beginning to appreciate the advantages which regularity in the working system and in the mode of living, resulting from a judicious adjustment of the working-hours, confers on all concerned. But all its good effects could only result from a strict and efficient system of government inspection. This the English executive has always perfectly understood, and in no country is the system of government inspection so powerfully and conscientiously developed as in England. And this justice must be rendered to the English factory inspectors; that, by their indefatigable zeal, conscientious fulfil-

ment of duty, and great professional ability, they have deserved the greatest praise in regard to the good results of the factory legislation.

CHAPTER II.

THE DISASTER AT GRANITE MILLS.

Immediately after the burning of the Granite Mill at Fall River, we entered into an examination, the results of which compose this chapter.

The facts which are given respecting the origin and progress of the fire were obtained from conversations with a hundred or so of the operatives of the mill, many of whom were employed in the fatal sixth story.

The supplementary account of those injured and killed, etc., was obtained by personal visits to the homes of each.

Granite Mill No. 1 was erected in 1863. It was constructed, as its name indicates, of granite, and was three hundred and sixty-eight feet in length, by sixty-eight in width, and five stories in height, with an attic above, having the same floor-space as the stories below.

This attic, or sixth story, was lighted by three windows, in each gable and by a row of windows in each half of the roof, aggregating, perhaps, twenty-five in all.

The gable-windows were apparently of the same size as those of the lower stories, while those in the roof were smaller, nearly square, and had but one sash. There are many other mills in the vicinity which, on the outside, seem to be the exact counterpart of what this was.

The fire occurred on the morning of the 19th of September, 1874. The fifth and sixth stories were almost wholly burned out, and the roof destroyed, with the exception of a small portion at the south end, which remained intact and attached to the gable.

A tower on the west or front side furnished the only means of entrance or exit; there was no other outside door to the whole building. This tower communicated with every story.

There were four fire-escapes attached to the building, formed of a series of iron platforms and ladders, extending from the fifth story to the ground, and communicating directly with all stories *but the sixth*.

Two of these escapes were attached to the front, midway between the tower and each end, and two to the back in the same relative position.

The three lower stories were used for weaving, carding, etc., the fourth and fifth for mule-spinning, and the sixth for spooling. The fourth and fifth stories employed a considerable number of young children as back-tenders; the employes of the sixth story were mainly girls, between the ages of twelve and eighteen, although there were some older, and also five or six men.

Out of the list of nineteen cases examined into, nine, twelve years of age or under, were employed the whole or a part of the time in this story. These children worked the same number of hours as other employes, namely, from 6.30 A. M., to 6.30 P. M., with one hour for dinner.

The fire originated near the north end of the fourth story. It swept rapidly through that story and the one above, being carried up by the belting. It was probably from five to eight minutes after its inception before it was known to those in the sixth story, and had they had the courage to face the smoke, which already filled the upper part of the tower, there is little doubt but they might have passed through it, without difficulty, and descended to the ground in safety; for no one asserts that, at the time the alarm was given in the attic, the *flames* had already reached the tower. But these children behaved in just such a manner as might have been expected. Terror-stricken, they ran to the south end, to escape from the smoke, already beginning to rise through the floor of the north end, passing, on their way, the door-way to the tower, but, not daring to essay its passage, meeting here again the smoke.

At the south end there was no succor; there was only less of the suffocating smoke.

Yet here, there were means of escape which men would have made use of, and which the few men among the number did make use of, to secure their own safety. There were

"warps" in abundance, lying all about; each of them a thread of considerable size, of strength sufficient to bear the weight of three ordinary men, and a half mile in length. Hundreds of these were there, carefully done up in coils, while one, in the hands of a courageous and clear-headed man, would have been sufficient for the emergency. One after another, he could have tied the warp around their waists, and lowered them to the ground, paying out constantly from the ample supply at hand. All but one of the men slid down on these warps and on ropes, or came down hand over hand; while perhaps but one of the women escaped in that way. Sixty men employed in this room would probably nearly all have escaped similarly; but of sixty children, and about all were children in the law, and females, too, it is scarcely to be expected that any would escape.

The fire originated in one of the mule-heads, and was probably caused by the friction of the gearing. Had there been a proper supply of water at hand, there is little doubt but it would have been extinguished in a very few minutes, and without loss of life or property. On this point we have been informed by an overseer in a mill, who has charge of two spinning-rooms, a very trustworthy man, that it is not very uncommon for mule-heads to be set on fire by the friction of the gearing, and that such an event occurred in one of his rooms but recently, which might have resulted in as dire a calamity as this of Granite Mill No. 1, had he not been provided with a sure means of its instantaneous extinguishment. For this purpose he keeps, always full, two pails of water standing by each mule. The immediate application of one pailful was sufficient in this case for its suppression; but it was his opinion, that had he been obliged to run fifty feet for his water and return with it, the fire would have been beyond his control.

When a man of long experience in spinning-rooms, well known among his friends for the excellence of his character, and whose judgment or opinion upon any point connected with his work would receive the highest consideration among those who know him, finds it necessary to take such precautions against fire, and makes such a statement as this of his

own experience, it shows, we think, the necessity for the same precautions in every mill in the state.

Our examination exhibits three points respecting this disaster which we conceive to be specially important, namely :

There was no supply of water in pails at each mule, as there should have been ;

The sixth story, where the greatest loss of life would be likely to occur, in case of fire, was provided with but *one* way of escape ; namely, the tower, situated in the middle of one side of the mill—a mill nearly four hundred feet long ;

And the youngest and least disciplined employes, the least able to face a danger with unterrified mind and without unnerved limb, were placed in the sixth story, where that danger was the most likely to overtake them.

A repetition of this disaster should be made practically impossible. No love of gain should be allowed to put human life at risk. The number of manufacturers who *knowingly* endanger the lives of their operatives is probably very small in this state ; but there are undoubtedly some, and these should be restrained by law. There are many more who take every means that they consider necessary to insure the safety of their operatives. These need law for enlightenment. Here and there can be found manufacturers who foresee and provide against every conceivable accident, but these men are exceptional, and always will be. Other men, whose love of gain may be no stronger, and whose hearts may be as tender, continue to endanger the health and lives of their employes through sheer ignorance or thoughtlessness.

We proceed now to give a more exact and particular account of each case investigated. And, as the *general* facts respecting the disaster are known to all, we conceived it to be more important to obtain the special facts relating to the *children* employed, as constituting that comparatively helpless class whose wrongs might otherwise find no voice, and whose rights to freedom and opportunities of education, through the collusion of parents and manufacturers, were in this case, as in thousands of others all over the state, completely ignored.

For this reason, we have not sought out the facts respecting those operatives over fifteen years of age who were killed or

injured. Moreover, we think it quite likely that we have not investigated *every* case under fifteen years, where death or injury resulted, though we think we must have discovered about all. And respecting those under fifteen, employed in the mill, who escaped uninjured, we have to say that it is not at all likely that we have enumerated all. We aimed, however, to include all who were employed in the attic.

VICTORIA WARNER, twelve years old last July (1874), had been at work between two and three months in Granite Mill No. 1; before this, worked for three months in the Durfee Mill, and previously had been to school "some," mainly at the factory school. She was killed.

MAGGIE LANERGAN, twelve years old last November (1874), had been at work in Granite Mill No. 1, about one year. For two years before, worked in Merchants' Mill. The statements of her parents were somewhat confused as to how much she had been at school during these three years, but they averred that she was sent out of the Merchants to attend school, and did so attend, and that she was on the point of being sent out of Granite No. 1, for the same purpose, when the accident occurred. She was employed in the attic and escaped by descending on a rope, part way, when the rope breaking or burning off, she was precipitated to the ground. Her injuries were internal, and a dislocation of the ankles. Her recovery was considered quite certain. The family is Irish.

JAMES SMITH, nine years old last October (1873), had only been at work in Granite No. 1, two days when the accident occurred. It was his first work in any mill; his mother having several children younger (two children being born within twenty months), had kept him at home to assist about the house. For this reason he *had never been at school*. His business was that of a "tuber," and his place of employment, the fifth story, going occasionally to the sixth, or attic, for supplies of "tubes." It was while in the attic on one of these errands that the fire occurred. He was killed. His body was recovered in a recognizable state, being not badly burned. The parents of this lad are English.

EDWARD GOSS, thirteen years old last April (1874), was a weaver, employed in the second story; he had been at work two years, but states that he was sent out three months each year to attend school. His parentage is English. He escaped from the mill by the stairway, without injury.

JOHN GOSS, brother of the last-mentioned, was fifteen years old some time during the summer just passed. His parents were unable to state his age with certainty. John had been at work in Granite Mill about five years, but had always been sent out three months each year to attend school. He escaped by the stairway, uninjured.

WILLIAM STINTON was eight years old, in December (1873). His parents could not give the exact date of his birth; but "it was Christmas week." He commenced work in Granite No. 1, "last winter"; by the averment of the parents, we should say in January, or *immediately after he was eight years of age*. William was employed as a "doffer" in the attic, and also as a "tuber" in the story below. He escaped by the stairway, uninjured. His earnings were usually about \$6.50 per month.

GEORGE STINTON, brother of the last, was fourteen years old the 17th of August last (1874), and had been at work in the mill for two years, or ever since the arrival of the family in America. His business was that of a "hoister" about the looms. He escaped by the stairway, uninjured.

These brothers Stinton are of English parentage, and have been in the country about two years. The mother said they came from "*Bermegum*," which being interpreted, means Birmingham.

Probably they have not been to school since their arrival in the country. Their exact statement on this point has been mislaid since the investigation was had.

WILLIAM THOMAS VINNECOMB was fourteen years of age last February (1874); had been at work about four months in Granite No. 1, and had never worked in any mill previously. He was the "back-boy" employed at the only pair of

mules in the attic, and escaped by coming down a rope, part way, and thence falling to the ground. No limbs were broken, and what injuries he received were internal. He had been at school "some."

JOSEPH LYNCH was nine last February (1874), and John Lynch was eleven last May. These boys are brothers, and both escaped by the stairway without injury. One was employed in the fourth story, and the other in the fifth.

Joseph had been at work five months, but before that did not work any, but went to school all the time. John had been at work two years; before he began work, had been to school "*some*." He has also been one term to the factory-school and one term to the "brick" school (a public school in the vicinity, so-called), within the two years that he has been at work.

JAMES NEWTON, came from Ashton-under-Lynde, England, in May, 1873, and began work as a "tuber," in the fifth story of the Granite Mill, the same month. He was *eight years old the sixth of August preceding*, or about ten years and one month when the calamity occurred.

He had not attended school since his arrival in this country, but had had a little schooling in England.

At the breaking out of the fire he was in the attic, or sixth story, having gone there for "tubes." He was killed, and his remains so badly burned as to be recognizable only by a small portion of his shirt.

ALBERT FERNELY, was ten years old the 18th of January, 1874, and had been at work in Granite No. 1 ever since the family came from England; consequently he had never attended school in this country.

This lad was a "tuber," employed in the fifth story, but at the breaking out of the fire was in the attic, having gone there, with one or two other children doing the same kind of work, for "tubes"; the smoke and flames prevented his return, so he jumped from the window, receiving such injuries that he died in two hours.

LYDIA POTROS, fifteen years of age the 13th of June, 1874, is of French birth, and had worked in Granite No. 1, being employed at "spooling," about one year. Previously to this, had worked nine months or so in the Slade Mill. Her parents averred that she had been to school "some" every year except the last. She jumped from the attic window and landed on a bed. Her injuries were internal, except a few scratches, and probably were not of a serious nature.

NOAH POTROS, brother of the last mentioned, was twelve years old the 6th of May, 1874. He assisted his sister at "spooling" a few hours every day, and had done so for a year past. Before going into the mill he attended school, but had not done so since he commenced work. He leaped from the attic window and survived the fall but two hours.

JOHN BRODER, or BROEDER, is of French birth, and was eight years old the 25th of February, 1874. He was a "spooler," and helped his sister, whose work also was "spooling," in the sixth story. He had been employed in Granite No. 1 but nine days; before that he worked for two weeks in the Durfee Mill. John says he had never attended school. He came down from the attic, part way to the ground, on a rope, and fell the rest of the way. He was but slightly injured.

GERTRUDE GRAY, aged nine years and nine months, had been employed in the Granite No. 1 about five weeks, and had never worked in any mill previously; but had been at school or helped about the house. She worked at "spooling" in the sixth story, and probably remained by the windows at the south end of the burning mill until suffocated by the smoke. She was seen many times screaming and gesticulating at the windows; and her mother thinks that she plainly saw her thrust forth her arms from a window at least fifteen minutes after the most of those who escaped had leaped forth. Her partially-burned remains were found near the window, after the fire was subdued, on that part of the sixth story floor which escaped the flames. Her parents are English.

MAGGIE HARRINGTON was fourteen years and three months old, and the second in a family of *seven*. The family are Irish. Maggie was a "spooler" in the attic, and had worked in the Granite No. 1 about four years.

She had come out every year for a term at the factory school, and was coming out again for that purpose on the following Saturday. She made no attempt at escape, but, according to the testimony of a member of the Gray family, just mentioned, she hid herself in a large box somewhere near the centre of the room. She was represented to us as an extraordinarily timid little girl, and was undoubtedly paralyzed with fear at the impending calamity. The mother informed us that she earned usually about \$24 a month.

MAGGIE SULLIVAN was eleven in May, 1874. She was a "spooler" in the sixth story, and had been at work there for fifteen months; she was expecting to be turned out in a month or two to attend school. She jumped from the attic window, and her ankles were dislocated and she received some bad cuts in the face. The family is Irish.

KATIE SULLIVAN, a sister of the last, was eight years old in April, 1874. She had never worked as an employé in a mill, but was attending school. Saturdays, there being no school, she was in the habit of assisting her sister at "spooling," which was the occasion of her presence in the mill at this time. Her breast-bone and several ribs were broken, but she seemed likely to recover.

Following will be found, presented in tabular form, some of the most important facts elicited by the investigation:—

No.	NAME.	Age.	Sex.	TIME EMPLOYED IN GRANITE MILL No. 1.		TIME EMPLOYED IN ANOTHER MILL.		TOTAL TIME EMPLOYED IN ANY MILL.		Result to each.
				Years.	Months.	Years.	Months.	Years.	Months.	
1	Victoria Warner,	12	Female,	-	3	-	3	-	6	Killed.
2	Maggie Lanergan,	12	"	1	-	2	-	3	-	Injured.
3	James Smith,	9	Male,	-	2 days.	-	-	-	2 days.	Killed.
4	Edward Goss,	13	"	2	-	-	-	2	-	Uninjured.
5	John Goss,	15	"	5	-	-	-	5	-	Uninjured.
6	William Stinton,	8	"	-	9	-	-	-	9	Uninjured.
7	George Stinton,	14	"	2	-	-	-	2	-	Uninjured.
8	Wm. Thos. Vinnecomb,	14	"	-	4	-	-	-	4	Uninjured.
9	Joseph Lynch,	9	"	-	5	-	-	-	5	Uninjured.
10	John Lynch,	11	"	2	-	-	-	2	-	Uninjured.
11	James Newton,	10	"	1	4	-	-	1	4	Killed.
12	Albert Fernely, ¹	10	"	-	-	-	-	-	-	Killed.
13	Lydia Poitros,	15	Female,	1	-	-	9	1	9	Injured.
14	Noah Poitros,	12	Male,	1	-	-	-	1	-	Killed.
15	John Broder,	8	"	-	9 days.	-	2 weeks.	-	3½ weeks.	Injured.
16	Gertrude Gray,	9	Female,	-	5 weeks.	-	-	-	5 weeks.	Killed.
17	Maggie Harrington,	14	"	4	-	-	-	4	-	Killed.
18	Maggie Sullivan,	11	"	1	3	-	-	1	3	Injured.
19	Katie Sullivan, ²	8	"	-	-	-	-	-	-	Injured.

¹ Had probably been employed somewhat more than one year in Granite Mill. ² Not a regular employé; she assisted her sister one day each week.

Summary of cases investigated: Killed, 7; Injured, 6; Uninjured, 6. Total, 19.

CHAPTER III.

STATISTICS REGARDING UPPER STORIES OF MILLS IN MASSACHUSETTS.

In the mills mentioned in the following table as having attics (necessarily in pitch-roofed buildings), the fire-ladders are of no use as a means of escape from them, unless they are stated to be upon the *end* or *ends* of the mill. If they are so placed, they furnish a means of exit without depending entirely on the tower or inside stairways; where they are wanting, a fire in the tower or inside stairways would cut off all means of egress, and necessitate jumping or lowering from the windows.

Quite a number of mills have recently made improvements in their means of escape, in case of fire, but we are unable to particularize. We desire to mention, however, two to which special attention has been called by a recent disaster.

No. 34. (*Granite Mill No. 1, Fall River.*)

Since the fire, this mill has had its attic changed into a complete story, and is now covered with a *flat* roof.

No. 34. (*Granite Mill No. 2, Fall River.*)

Outside iron stairways, with platforms adjacent four windows of each story, and extending from the ground to the attic, have been attached to each end of this mill.

MEANS OF ESCAPE,

In case of Fire or Panic, from Upper Stories of Mills.

Office No. of Mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
8	AMESBURY. Spinning, . . .	-	16	138	Mill, 4 stories; flat roof; stairways 5 feet 4 inches wide, in tower; 2 ladders, with platforms at each story; doors open inwardly.
98	Drying, dressing, carding and spinning, . . .	69	56	1,151	Eight mills. No. 1 has 2 stories and an attic; No. 2 has 5 stories and 2 attics; No. 3 has 3 stories, attic and basement; No. 4, 5 stories, attic and basement; No. 5, 4 stories and basement, with flat roof; No. 6, 3 stories and an attic; No. 7, 4 stories, 2 attics and basement; No. 8, 5 stories, with flat roof. Means of escape are stairways 4 feet and 5 feet wide. Nos. 2, 4 and 8 have 2 stairways to each story; there are fire-ladders, with platforms, on each end of every mill, and the same on the sides; doors open inwardly.
155	ANDOVER. Preparation and spinning, . . .	22	-	105	Mill, 3 stories and an attic; means of escape are a stairway 4 feet wide, and a wooden ladder to roof; doors open outwardly.
167	Preparation, . . .	11	-	77	Mill, 2 stories and an attic; means of escape are a stairway 3 feet and 2 inches wide; doors open inwardly.
167	Preparation, twisting and reeling, .	36	-	102	Two mills,—one 2 stories and an attic; the other, 1 story and an attic; means of escape are two stairways, one 3 feet 8 inches wide, and the other 4½ feet wide; there are plenty of long portable ladders always on hand, and ready for use in case of fire; doors open inwardly.
64	ATHOL. Spinning, . . .	5	-	35	Mill, 2 stories and an attic; the means of escape is one stairway 3½ feet wide; doors open inwardly.
112	Spinning . . .	1	-	31	Mill, 4 stories and an attic; the means of escape is one stairway 3½ feet wide; doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
140	ATHOL—Con. Spinning, . . .	2	—	18	Mill, 2 stories and an attic; the means of escape is one stairway 3½ feet wide; doors open inwardly.
162	Preparation and spinning, . . .	—	25	30	Mill, 4 stories, with flat roof; the upper story only is occupied by this firm; the means of escape are one stairway 3½ feet wide, and one fire-ladder; the doors open inwardly.
163	Spinning, . . .	11	—	17	Mill, 2 stories and an attic; one stairway 3 1-6 feet wide is the only means of escape in case of fire; doors open inwardly.
237	Spinning, . . .	33	—	71	Mill, 2 stories and an attic; means of escape are stairway 3½ feet wide, and stationary ladders with platforms; also a good supply of portable ladders; doors open inwardly.
57	ATTLEBOROUGH. Spinning and spooling, . . .	23	—	87	Mill, 3 stories and an attic; means of escape are an inside stairway 3½ feet wide, on end of building, and a good supply of portable ladders; doors open outwardly.
176	BALLARDVALE. Spinning, . . .	24	—	178	Mill, 3 stories and an attic; stairway 4½ feet wide in tower; iron ladders, with balconies to each room; doors open outwardly.
245	BARRE. Spinning, . . .	8	—	76	Mill, 3 stories and an attic; means of escape are tower in centre of mill, with stairway 4 feet wide, and fire-ladders with platforms in rear of mill; they have connection at each end with out-buildings.
209	BLACKSTONE. Spinning, . . .	39	—	708	Mill, 5 stories and an attic; means of escape are by stairways 4 feet wide in 5 towers, and ladders about 100 feet apart, with platforms at every story; some doors open outwardly, and some slide.
236	BRAINTREE. Spinning, . . .	—	10	41	Mill, 3 stories, with flat roof; means of escape are inside stairways 3½ feet wide; doors open inwardly.
241	Preparation, . . .	3	—	10	Mill, 2 stories and basement; the upper room is an attic, the means of escape from which is by an inside stairway 3½ feet wide; the doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
227	BOYLSTON,	-	-	112	This mill is only one story high, and has a plenty of doors to escape by in case of fire.
71	CANTON. Spinning, . . .	44	-	166	Mill, 4 stories and an attic; the means of escape are stairways in the tower, in the centre of the mill, and inside of the mill at one end; also fire-ladders, with platforms at each story; doors open outwardly.
46	CLINTON. Dressing and warping, . . .	-	68	833	Nearly all the rooms are on the ground floor; some portions of the mill are 3 stories high, the means of escape from which are by stairways 3 feet and 4 feet wide, and by iron ladders, with platforms at each story; doors open inwardly.
25	CHICOPEE. Spinning, . . .	-	83	1,546	There are 7 mills. Nos. 1, 2, 5 and 6 are 4 stories and an attic; but no one is employed in the attic in Nos. 1, 2 and 5; in No. 6 there are 6 employed. Nos. 2, 4 and 7 are 5 stories high, with flat roofs; means of escape from each are a stairway of 4 feet 8 inches or 5 feet in width, in a central tower, and a good supply of ladders, with platforms at each story; doors open outwardly.
136	CORDAVILLE. Spinning, . . .	9	-	84	Mill, 3 stories and an attic; means of escape are stairway 4 feet wide in tower, and 2 fire-ladders, with platforms at each story; doors open inwardly.
158	DRACUT. Spinning, . . .	-	17	211	Mill, 5 stories, with flat roof; means of escape are stairway 4 feet wide in tower, and stationary ladders, with platforms at each story; also a good supply of portable ladders. The two doors of the lower story open inwardly; in the upper rooms they open outwardly.
146	EASTHAMPTON. Spooling and warping, . . .	28	-	186	Mill, 4 stories; the upper room is an attic; the means of escape are stairways in halls inside the mill, with doors at one end where ladders can be used; doors open outwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
173	EASTHAMPTON—Con. Spinning, . . .	16	—	122	Mill, 3 stories and an attic; means of escape are stairway 4 feet wide in tower, and ladders with platforms at the ends of the mill; doors open inwardly.
173	Spinning, . . .	22	—	172	Mill, 4 stories; the upper room is an attic; means of escape are a stairway 3½ feet wide in tower, and fire-ladders at each end of mill; doors open inwardly.
65	ENFIELD. Spinning, . . .	2	—	52	Mill, 4 stories and an attic; means of escape are a stairway 4½ feet wide in wooden porch, and one fire-ladder; doors open inwardly.
107	Spinning, . . .	5	—	75	Mill, 4 stories; the upper room is an attic; the means of escape are stairways 3 feet and 4 feet wide in two towers; doors open outwardly.
2	FALL RIVER. Spooling, warping and dressing, . .	73	—	840	Two mills, each 5 stories and an attic; means of escape is a stairway 4 feet wide in a tower in the centre of each mill; there are also 3 fire-ladders on the back side and 3 on the front side of each mill; doors open inwardly.
5	Spooling and warping, . . .	6	—	77	Mill, 4 stories and an attic; means of escape are stairways 4-12 feet wide, at each end of mill, and 4 ladders on the outside, connecting with windows of each story; doors open outwardly.
19	Spooling, warping and slashing, . .	49	—	331	Mill, 5 stories and an attic; means of escape is a stairway 4½ feet wide in tower in centre of mill. There are no ladders on the ends; doors open inwardly.
21	Spooling, warping and slashing, . .	38	—	319	Mill, 4 stories and an attic; means of escape are stairway 5 feet wide in tower in centre of mill, and 4 ladders with platforms connecting with two windows of each story up to the fourth; the attic has only the stairs in the tower; doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
34	FALL RIVER—Con. Spooling, warping and slashing, .	107	—	768	Two mills, each 5 stories and an attic; means of escape are a stairway $4\frac{1}{2}$ feet wide in tower in centre of each mill, and 4 and 5 ladders to each story, except the attics, which have only the stairway; doors open inwardly.
45	Spooling, warping and dressing, .	—	78	329	Mill, 5 stories with flat roof; means of escape are stairways $4\frac{1}{2}$ feet wide at each end of mill, and 3 ladders with platforms at each story; doors open outwardly.
56	Spooling, warping and dressing, .	21	—	144	Mill, 5 stories and an attic; means of escape are stairs $4\frac{1}{2}$ feet wide at each end of mill, and 1 ladder in centre; doors open outwardly.
58	Spinning,	—	49	389	Mill, 5 stories and basement; means of escape are stairways in tower in centre of mill and at each end; stairways are $5\frac{1}{2}$ feet wide in tower; those at the ends of the mill are $4\frac{1}{2}$ feet wide; there are also 4 iron ladders with platforms at each story; doors open outwardly.
59	Spooling, warping and dressing, .	—	75	734	Mill, 6 stories with flat roof; means of escape are 4 stairways 4 feet and 5 feet wide; 2 in towers and 2 inside mill; also 6 fire-ladders with balconies at each story; doors open inwardly.
66	Spinning and spooling,	—	70	178	Mill, 4 stories with flat roof; means of escape are stairways 4 feet wide at each end of mill, and 4 ladders with platforms at each story; doors open outwardly.
68	Spooling, warping and dressing, .	—	44	296	Mill, 5 stories, with flat roof; means of escape are stairway, $4\frac{1}{2}$ feet wide, at each end of mill, and 3 ladders, with platforms at each story; doors open inwardly.
78	Spinning,	—	84	308	Mill, 5 stories and basement; it has a flat roof; means of escape are stairway 5 feet wide in tower and 5 fire-ladders, with balconies at each story; doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
91	FALL RIVER—Con. Spooling, warping and dressing, .	45	—	255	Mill, 5 stories and an attic; means of escape are stairways at each end of mill, and 4 ladders, with platforms at each story; doors open inwardly.
97	Spooling, warping, spinning and dressing, . . .	—	124	437	Mill, 5 stories, with flat roof; means of escape are stairways $5\frac{1}{2}$ feet wide in each of two towers and 4 stationary ladders, with platforms at each story; doors open inwardly.
97	Spinning, . . .	—	22	140	Mill, 5 stories, with flat roof; means of escape are stairway 4 feet 2 inches wide in tower in centre of mill and 4 ladders, with platforms at each story; doors open inwardly.
102	Spinning, . . .	—	40	361	Mill, 5 stories, with flat roof; means of escape are stairways at each end of mill and 3 ladders, with platforms at each story; stairways 4 feet wide; doors open outwardly.
104	Spinning, spooling and dressing, .	—	74	361	Mill, 5 stories and basement, with flat roof; means of escape are stairways 4 feet 2 inches wide at each end and 4 ladders, with platforms at each story; doors open outwardly.
108	Spooling, warping and dressing, .	27	—	201	Mill, 5 stories and an attic; means of escape are stairways $4\frac{1}{2}$ feet wide at each end of mill and two ladders, with platforms at each story; doors open inwardly.
108	Spooling, warping and dressing, .	22	—	204	Mill, 5 stories and an attic; means of escape are stairways $4\frac{1}{2}$ feet wide at each end of mill, and 2 ladders, with platforms at each story; doors open outwardly.
111	Spooling, warping and dressing, .	55	—	398	Mill, 5 stories and an attic; means of escape are stairways $4\frac{1}{2}$ feet and $3\frac{1}{2}$ feet wide, in two towers, and 8 stationary ladders, with platforms at each story; doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
113	FALL RIVER—Con. Spooling, warping and dressing, .	47	-	386	Mill, 5 stories and an attic; means of escape are stairways 4½ feet wide, at each end of mill, and 5 ladders, with platforms at each story except the attic; doors open outwardly.
116	Spinning, . . .	-	26	295	Mill, 5 stories, with flat roof; means of escape are stairways 4 feet 2 inches wide, at each end of mill, and 3 ladders, with platforms at each story; doors open outwardly.
120	Spooling, warping and dressing, .	17	-	129	Mill, 4 stories and an attic; means of escape are stairways 3½ feet wide, at each end of mill, and ladders on each side and one at the north end; doors open outwardly.
121	Spinning, . . .	-	45	389	Mill, 5 stories and basement; flat roof; means of escape are stairways 4½ feet wide, at each end of mill, and 2 ladders extending to the upper story, with platforms at each; 3 to the fourth story, and 4 to the third; doors open inwardly.
129	Engraving, folding and drying, . .	-	68	500	Mill, 4 stories, with flat roof; stairways 7 feet wide, in tower and ends of mill, and ladders, with platforms at each story; some doors open inwardly and some outwardly.
137	Spooling, warping and dressing, .	-	44	378	Mill, 5 stories, with flat roof; means of escape are 3 stairways, each 4 feet wide, and 4 ladders, with platforms at each story; doors open outwardly.
139	Spooling, warping and dressing, .	117	-	789	Two mills, each 5 stories and an attic; means of escape are—No. 1 mill, stairways in tower, in centre and each end of mill; No. 2, stairway in tower in centre of mill; stairways 5 feet wide in each tower; those at the ends of the mill are 3 feet wide; there are also 4 ladders running to the fifth story on each mill, with platforms at each story; doors open outwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
143	FALL RIVER— Con. Spinning, spooling, warping and dressing,	-	49	242	Mill, 5 stories, with flat roof; stairways $4\frac{1}{2}$ feet wide at each end of mill; and ladders with platforms, each connecting with three windows in every story; doors open outwardly.
144	Spinning, spooling, warping and dressing,	-	29	150	Mill, 4 stories and a basement; stairways at each end of mill, and two outside ladders to every room; width of stairways, 3 feet 10 inches; doors open outwardly.
165	Spooling, warping and dressing,	-	25	152	Mill, 4 stories; one-half with flat roof; means of escape are 2 stairways, each 5 feet 4 inches wide, and 2 ladders, with platforms at each story; doors open outwardly.
170	Spooling and dressing,	13	-	91	Mill, 4 stories and an attic; means of escape are one stairway $4\frac{1}{2}$ feet wide, and 2 ladders extending to the roof, with platforms; doors open inwardly.
191	Spooling, warping and dressing,	20	-	220	Mill, 5 stories and an attic; stairway in centre of mill, 4 feet 5 inches wide; ladders with platforms on both sides and on one end of mill; doors open inwardly.
192	Spooling, warping and dressing,	14	-	118	Mill, 4 stories and an attic; means of escape are 2 stairways 4 feet wide, and 2 ladders extending to the fourth story; doors open inwardly.
193	Spinning,	-	29	257	Mill, 5 stories and a basement; stairways 5 feet wide at each end of mill, and 5 ladders, with platforms at each story; doors open outwardly.
194	-	-	-	165	Nearly all the help work on the ground floor; ladders with platforms at windows of all the buildings, and a number of doors to each room; doors open inwardly.
195	Spinning and spooling,	21	-	80	Mill, 4 stories and an attic; means of escape are 3 stairways, 2 feet 6 inches wide; doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
196	FALL RIVER—Con. Spinning,	—	18	219	Mill, 5 stories, with flat roof; means of escape are stairway 5 feet wide, in tower in centre of mill, and 4 fire-ladders, with platforms at each story; doors open inwardly.
197	Finishing,	—	13	34	Mill, 2 stories, with flat roof; means of escape are an outside stairway 5 feet wide, and one fire-ladder, with balcony; doors open inwardly.
198	Spinning, spooling, warping and dressing,	35	—	204	Mill, 4 stories and an attic; stairway 4 feet 9 inches wide, at each end of the mill; 5 ladders, extending to the fourth story, with platforms; doors open inwardly.
206	FARNUMSVILLE. Spinning and spooling,	17	—	70	Mill, 4 stories and an attic; means of escape are stairway 4 feet wide, in tower, and an iron ladder at one end of the mill; doors open inwardly.
224	Spinning and spooling,	10	—	114	Mill, 3 stories and an attic; means of escape are one stairway 3½ feet wide, and ladders to each story; part of the doors open inwardly and part outwardly.
218	FITCHBURG. Spinning,	6	—	68	Mill, 3 stories and an attic; means of escape are one stairway 5 feet wide, and one ladder, with platforms at each story; doors open inwardly.
35	FLORENCE. Spinning and spooling,	25	—	100	Mill, 3 stories and an attic; means of escape are a stairway 5 feet wide in tower on front of mill, and iron ladders in rear of mill, with platforms at each story; doors open outwardly.
145	GILBERTVILLE. Spinning, spooling, warping and dressing,	22	11	422	Three mills. Nos. 1 and 2 are 4 stories and an attic; No. 3, 6 stories with flat roof; means of escape are stairways 5 feet and 6 feet wide in tower in each mill, and 2 ladders on each mill, with platforms at each story; doors open outwardly.
33	GRAFTON. Spinning, spooling and warping,	23	—	167	Mill, 3 stories and an attic; means of escape are stairways 3½ feet and 5½ feet wide in towers, and 4 ladders extending to the third story, and one ladder extending to the attic; each with platforms at each story; doors open outwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OR PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
99	GRAFTON—Con. Spooling, warping and dressing,	26	—	125	Mill, 3 stories and an attic; means of escape are stairways 5½ feet wide, and 4 outside ladders, with platforms at each story; doors open inwardly.
159	GREAT BARRINGTON. Spinning, spooling and warping,	18	8	128	Three mills.—Nos. 1 and 3, 2 stories and an attic; No. 2, 3 stories with flat roof. No. 1 mill has 2 stairways, each 8 feet 3 inches wide; Nos. 2 and 3 have one stairway each, one 8 feet 8 inches, and the other 4 feet wide, and stationary iron ladders to each story; doors open inwardly.
12	Spinning, . . .	22	—	183	Mill, 3 stories and an attic; means of escape are stairways 5 feet wide and stationary iron ladders with platforms at each story; doors open inwardly.
148	GRISWOLDVILLE. Spinning, spooling and warping,	—	40	206	Two mills, one 2 stories and the other 3, with flat roof; means of escape are stairways 3½ feet wide and ladders with platforms at each story. All doors open outwardly except those of the lower stories.
39	HAYDENVILLE. Spinning, spooling, warping and dressing,	21	—	78	Mill, 4 stories and an attic; means of escape are stairway 5 feet wide in tower in front of mill, and ladders in rear extending to the fourth story; doors open inwardly.
229	HINSDALE. Spinning, . . .	12	—	110	Mill, 3 stories and an attic; means of escape are stairway 5 feet wide in tower at end of mill, and an inside stairway at the other end extending up three stories; doors open outwardly.
31	HOLYOKE. Warping, dressing and burling, . . .	21	—	249	Mill, 4 stories and an attic; means of escape are one stairway in tower at one end of mill and an inside stairway at the other end. Width of stairway in tower, 4½ feet; in mill, 3½ feet; there is one ladder with platforms in center of north side; doors open inwardly.
54	Spooling, warping and dressing,	163	—	1,246	Mills, 5 stories and an attic; means of escape are double stairways 7 feet wide in towers, and ladders with platforms on every quarter of the mill; doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
149	HOLYOKE—Con. Spinning, . . .	66	—	524	Mill, 3 stories and an attic; means of escape are double stairways 5 feet wide in tower, and fire-ladders with platforms every one hundred feet; doors open outwardly.
150	Spinning, dressing and warping, . .	46	—	500	Mill, 5 stories and an attic; means of escape are stairway 5 feet wide in tower, and ladders with platforms at each end of mill; doors open outwardly.
152	Beaming, . . .	12	—	54	Mill, 3 stories and an attic; means of escape is by stairway 4 feet wide in tower; doors open inwardly.
157	Spinning, . . .	36	—	272	Mill, 4 stories and an attic; means of escape are stairway 4½ feet wide in tower in centre of mill, and ladders with platforms at each end; doors open inwardly.
230	Spinning, . . .	8	—	184	Mill, 3 stories and an attic; means of escape are stairway 4 feet wide in tower on front of mill, and one ladder with platforms on the opposite side; doors open inwardly.
234	Spinning, . . .	—	10	97	Mill, 3 stories, with flat roof; means of escape are one fire-ladder at each side of mill, and an inside stairway 4 feet wide; doors open inwardly.
235	Preparation, . .	2	—	89	Mill, 4 stories and an attic; means of escape are stairways in centre and one end of mill, 100 feet apart; there is a 2½-story building and a 1-story building at the other end of mill, giving 14 feet from upper story to roof, and a shorter distance to the ground; doors open inwardly.
52	HOLDEN. Spinning, . . .	2	—	29	Mill, 2 stories and an attic; two means of escape,—by stairs and doors in two stories, and one in the attic; width of stairs, 3 feet; doors open inwardly.
41	INDIAN ORCHARD. Spinning, . . .	37	32	660	Two mills,—No. 1, 4 stories and an attic; No. 2, 3 stories, with flat roof; means of escape are stairways 6 feet, and 6 feet 2 inches wide, and ladders with platforms on the sides and ends of mills; doors open outwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
42	IPSWICH. Spinning,	7	—	168	Mill, 3 stories and an attic; means of escape are stairs, 5½ to 6 feet wide, and ladders with platforms in front and rear of mill; doors open inwardly.
43	Spinning,	5	—	35	Mill, 2 stories and an attic; carding-room on the ground floor has three doors; the next room, two doors; and the attic, one door and a window, by which help can get on the roof of a one-story building; width of stairs, 3 feet 9 inches; doors swing both ways.
28	LAWRENCE, Spinning and spooling,	109	—	866	Mill, 4 stories and an attic; means of escape are 2 stairways 6 feet wide, and 3 iron ladders, with platforms, on each side of mill; doors open inwardly.
47	Spooling and warping,	45	—	190	Mill, 4 stories and an attic; means of escape are stairways 5 feet wide, in tower, and ladders, with platforms at each story; doors open outwardly.
49	Spinning and twisting,	3	—	111	Mill, 3 stories and an attic; means of escape are stairways 5 feet wide, at each end of mill, and 5 iron ladders, with platforms; doors open outwardly.
82	Spooling, warping and dressing,	—	185	1,886	Mill, 7 stories, with flat roof; means of escape are stairways, in three towers, and inside stairways at each end of mill; also, 5 fire-ladders on the front, with platforms,—each ladder being adjacent to 2 windows of each story,—and ladders, with platforms, at ends and back of mill, at convenient distances; width of stairs, 6 feet; doors open outwardly.
82	Packing, engraving, folding and shearing,	—	186	680	Mills, 2 and 3 stories high, with flat roofs; means of escape are ladders, with platforms at each story, and stairways 4 feet wide.
82	Spinning,	—	537	1,526	Mill, 4 stories, with flat roof; means of escape are inside stairways 6 feet wide and ladders, with platforms at each story; there are no doors except on the first floor, where they open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of Mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
85	LAWRENCE—Con. Spooling, warping and dressing, . . .	131	—	591	Mill, 5 stories and an attic; means of escape are stairways 4 feet 8 inches wide at each end of mill, and 4 ladders, with platforms at each story; doors open outwardly.
130	Dressing . . .	—	18	338	Mill, 5 stories with flat roof; means of escape are stairway 5 feet wide in tower on front of mill, and two ladders, with platforms on the back of mill; doors open outwardly.
131	Spinning and card ing, . . .	—	31	1,097	Three mills, with French roofs; they are connected, and operatives can pass from one mill to the other, through 2 sets of iron doorways, to the porch in either mill; there is 1 stairway 6 feet wide in tower on the front of each mill; for the three mills there are also 19 ladders, at convenient distances, with platforms; doors open outwardly.
171	Spinning and dress ing, . . .	—	150	1,705	Three mills, each 7 stories, attic, and basement; and one mill, 3 stories with flat roof; the attics are not used for machinery, and no one works in them; means of escape are stairways 5 feet and 5 feet 6 inches wide; also stationary iron ladders, one to every 100 horizontal feet; doors open outwardly.
174	Finishing, . . .	—	36	98	Mill, 2 stories and a basement; flat roof; means of escape is one stairway 5 feet wide; doors open inwardly.
178	Spinning, . . .	—	36	77	Mill, 2 stories with flat roof; stairs 5 feet wide; doors open outwardly.
7	LOWELL. Spinning, . . .	—	38	419	Mill, 5 stories with flat roof; means of escape are 2 or more stairways in each building, also fire-ladders, with platforms, all around the mills; doors open outwardly; stairways 4 feet 10 inches wide.
11	Spinning, . . .	19	—	146	Two mills,—one 4 stories and an attic, and the other 3 stories and an attic; means of escape are a stairway in one mill and a stairway and ladder in the other; width of stairways 5 feet; doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
14	LOWELL—Con. Preparation, . . .	36	30	1,317	Two mills, one 5 stories and an attic and one 5 stories with flat roof; means of escape are stairways 5 feet wide and ladders with platforms at both sides and ends of mills; doors swing both ways.
36	Spinning, spooling, warping and dressing, . . .	136	-	895	Three mills, each 5 stories and an attic; means of escape are stairways 5 feet wide, in towers, to each mill, and ladders at both ends and sides of mills, with platforms at each story; doors open inwardly.
48	Spinning and spooling, . . .	-	126	1,286	Mills, 5 stories with flat roof; means of escape are stairways 5 feet 3 inches wide in towers, and 33 fire-ladders with platforms at each story; doors swing both ways.
50	Spinning, . . .	-	14	157	Mill, 3 stories with flat roof; means of escape are stairway 3½ feet wide and an outside fire-ladder; doors open outwardly.
51	Spinning, . . .	38	-	890	Mills, 5 stories and an attic; means of escape are stairways 5 feet and 6 feet wide in towers, and ladders with platforms at both sides and ends of mills; doors open outwardly.
55	Spinning, . . .	106	-	1,231	Mill, 5 stories and an attic; means of escape are stairways 4½ feet and 6½ feet wide in towers, and ladders with platforms at both sides and ends of mill; doors open outwardly.
60	Spinning, spooling, warping and dressing, . . .	-	103	743	Mill, 6 stories, with flat roof; means of escape are stairways 4 feet and 5 feet 6 inches wide, in towers; also, ladders, with platforms at each story; doors open outwardly.
62	Preparation, . . .	54	-	-	Three mills; each 5 stories and an attic; means of escape are stairways 3½ feet and 5 feet wide, in towers in each mill; also, ladders, with platforms, at both sides and ends of mills; doors open outwardly.
67	Spooling, warping and dressing, . . .	10	-	66	Mill, 3 stories and an attic; means of escape are 2 stairways, each 6 feet wide; doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of Mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
180	LOWELL—Con. Spinning, . . .	7	—	29	Mill, 2 stories and an attic; means of escape are stairways 4½ feet wide; doors open outwardly.
181	Spooling and warping, . . .	—	16	68	Mill, 3 stories, with flat roof; stairways 4 feet wide are the means of escape; doors open outwardly.
182	Spinning, . . .	—	16	181	Mill, 5 stories, with flat roof; means of escape are stairways 5 feet wide, and fire-ladders on outside of mill; doors open outwardly.
183	Spinning, . . .	—	10	65	Mill, 4 stories, with flat roof; stairways 5 feet wide, in porch in front of mill, and stationary iron ladders, with platforms, in rear; doors open outwardly.
184	Spinning, . . .	34	—	71	Mill, 3 stories and an attic; means of escape are stairways 5 feet wide, on each side of mill; doors open inwardly.
185	Spinning, . . .	—	12	29	Mill, 3 stories, with flat roof; means of escape are stairways 2 feet 9 inches wide; doors open outwardly.
186	Spinning and spooling, . . .	20	—	97	Mill, 2 stories and an attic; means of escape are stairways 4 feet wide; some doors open inwardly, and some outwardly.
187	Spooling, . . .	4	—	25	Mill, 2 stories and an attic; 2 straight flights of stairs are the means of escape; doors open outwardly.
188	Spinning, . . .	7	—	52	Mill, 2 stories and an attic; means of escape are stairways 3 feet wide; doors open inwardly.
189	Spinning, . . .	10	—	52	Mill, 3 stories and an attic; the means of escape are stairways 5 feet and 6 feet wide; also outside ladders; doors open inwardly.
190	Spinning, . . .	—	14	105	Mill, 5 stories, with flat roof; means of escape are stairways 8 feet wide in tower; also ladders with platforms at each story; part of the doors open inwardly, and part outwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
199	LOWELL—Con. Spinning, . . .	-	27	104	Mill, 4 stories, with flat roof; means of escape are stairways 5 feet wide; doors swing both ways.
61	METHUEN. Spinning and dressing and jute preparing, . . .	33	30	544	Two mills,—one mill 5 stories and an attic; the other, 5 stories, with flat roof; means of escape are stairways 5 feet and 6 feet wide, in towers, and 3 iron ladders, with platforms at each story; doors open inwardly.
179	Spinning, . . .	9	-	209	Mill, 3 stories and an attic; means of escape are 2 stairways 4½ feet and 5 feet wide, also two fire-ladders; doors open inwardly.
105	MIDDLEBOROUGH. Spinning, . . .	16	-	109	Mill, 2 stories and an attic; there are stairways at each end of mill 4 to 4½ feet wide, also ladders, with platforms at each story; doors open inwardly.
18	MILLBURY. Spinning, . . .	12	-	97	Mill, 3 stories and an attic; means of escape are stairways 4 feet wide in tower; also fire-ladders, with platforms at each story; doors open inwardly.
124	Spinning, spooling and dressing, .	24	-	70	Mill, 3 stories and an attic; stairways 4 feet wide in tower, and 2 stationary ladders with platforms; doors open inwardly.
134	Spooling, warping and dressing, .	6	-	53	Mill, 4 stories and an attic; means of escape are stairways 2½ feet and 4 feet wide in front and rear of mill, and ladders with platforms at each story; doors open inwardly.
202	Spinning, . . .	-	9	92	Mill, 4 stories with flat roof; means of escape is a stairway 4 feet wide in tower; also one ladder with platforms, and a supply of portable ladders 30 and 40 feet long; doors open outwardly.
205	Spinning and spooling, . . .	15	-	87	Mill, 2 stories and an attic; means of escape are stairway 3 feet 9 inches wide in tower, and one stationary ladder; doors open outwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
211	MILLBURY—Con. Spooling, warping and dressing, . . .	9	—	25	Mill, 2 stories and an attic; means of escape are 2 stairways each 5 feet wide, and 2 ladders with platforms; doors open outwardly.
216	Spinning, . . .	—	10	95	Mill, 4 stories with flat roof; means of escape are stairways 4 feet wide in front and rear of mill, and ladders with platforms at each story; doors swing both ways.
217	Spinning, . . .	5	—	169	Mill, 2 stories and an attic; means of escape are stairway 4 feet wide in tower, and 2 ladders with platforms; doors open inwardly.
220	Spinning, . . .	3	—	74	Mill, 3 stories and an attic; means of escape are stairway 3½ feet wide in tower, and 2 fire-ladders; doors open inwardly.
221	Spinning and spooling, . . .	7	—	46	Mill, 2 stories and an attic; means of escape is a stairway 3½ feet wide; doors open inwardly.
226	Spinning and spooling, . . .	—	—	—	Mill, 3 stories and an attic; stairway 4 feet 3 inches wide in tower, and 2 ladders with platforms at each story; doors open outwardly.
138	NEEDHAM. Spinning, . . .	9	—	70	Mill 2 stories; there is one stairway 4 feet wide; nearly all the help work on the ground floor; doors open inwardly.
72	NEW BEDFORD. Spinning, . . .	13	—	111	Mill, 3 stories and an attic; means of escape are 2 stairways, each 4 feet wide, and 3 fire-ladders; doors open outwardly.
92	Spinning, spooling, warping and dressing, . . .	—	130	531	Mill, 4 stories with flat roof; means of escape are stairways 4 and 6 feet wide in towers in front and rear of mill, and 4 ladders with platforms at each story; doors open outwardly in front tower and inwardly in back.
117	Spinning, spooling, warping and dressing, . . .	170	—	1,526	Four mills, each 4 stories and an attic; means of escape are stairways 4 feet wide in towers, and fire-ladders with platforms on sides and ends of mills; doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
10	NEWBURYPORT. Spinning, spooling, warping and dressing,	29	-	239	Mill, 4 stories and an attic; means of escape are 2 stairways, each 5½ feet wide, and 4 fire-ladders; doors open inwardly.
44	Spooling, warping and dressing,	22	-	242	Mill, 4 stories and an attic; means of escape are stairway 5 feet wide in tower in centre of mill, and ladders at each end with platforms at each story; doors open outwardly.
76	Spooling, warping and dressing,	30	-	319	Mill, 4 stories and an attic; means of escape are 2 stairways 4 feet and 5 feet wide, in towers; also, 2 fire-escape ladders to each story; doors open inwardly.
84	Spinning, spooling, warping and dressing,	28	-	228	Mill, 3 stories and an attic; stairway 5 feet wide in tower in centre of mill, and six ladders, with platforms; 2 on each side and 1 on each end of mill; doors are double; one-half opens in and one-half out.
239	NEWTON. Spinning,	-	12	132	Mill, 4 stories, with French roof; means of escape are stairway 4½ feet wide, in tower, and 2 ladders, with platforms at each story; doors open inwardly.
73	Spinning, spooling, warping and dressing,	29	-	181	Mill, 3 stories and an attic; means of escape is stairway 4½ feet wide; doors open inwardly.
75	NORTH ANDOVER. Spinning,	-	3	67	Mill, 4 stories, with flat roof; means of escape are stairway in tower in front of mill and 2 fire-ladders,—one on each side; width of stairway, 4½ feet; doors open outwardly.
175	Dressing,	3	-	104	Mill, 4 stories and an attic; stairway 4½ feet wide, in tower, and iron ladders at each story; doors open outwardly.
177	Spinning and drying,	3	-	75	Mill, 4 stories and an attic; means of escape are 2 stairways, each 4 feet wide, and 1 stationary iron ladder; doors open outwardly, except the one in the attic, which opens inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic
243	NORFOLK. Spinning,	3	—	95	Mill, 6 stories and an attic; means of escape are stairways 3 feet 7 inches wide, and fire-ladders, with platforms at each story; some doors open inwardly and some outwardly.
213	NORTHBIDGE. Spinning, spooling, warping and dressing,	—	42	180	Mill, 5 stories, with flat roof; means of escape are stairway 4 feet wide in tower, and 1 ladder, with platforms at each story; doors open inwardly.
222	Spinning and spooling,	—	13	62	Three-story building, but have no machinery above the second story; means of escape are 3 stairways each 4 feet wide, one in centre and one at each end of mill; doors open inwardly.
9	NORTH CHELMSFORD, Spinning,	—	38	73	Mill, 2 stories and basement; stairway 4½ feet wide in tower; can escape in case of fire from windows in every room, as one side of each room is on the ground; doors open inwardly.
123	OAKDALE,	—	—	77	This mill is all on the ground floor, and has four outside doors as means of escape; doors open inwardly.
123	Spinning, spooling, warping and dressing,	—	35	93	Mill, 4 stories, with flat roof; means of escape are stairway 4 feet wide in tower, and 1 ladder on each side of mill, with platforms; doors open inwardly.
219	Spinning, spooling and warping,	13	—	47	Mill, 3 stories and an attic; means of escape are stairway 3½ feet wide in tower, and 1 fire-ladder; doors open inwardly.
164	PITTSFIELD. Spinning,	—	14	130	Mill, 4 stories, with flat roof; means of escape are stairways 3½ feet wide, and 1 ladder, with platforms covering two windows in every story; doors open inwardly.
231	Spinning,	11	—	147	Mill, 3 stories and an attic; means of escape are stairway 5½ feet wide at one end of mill, and 2 ladders on each side, with platforms; also scuttle with ladder running over roof; doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
232	PITTSFIELD—Con. Spinning, . . .	—	9	142	Mill, 3 stories, with flat roof; means of escape are stairway 4 feet wide in tower, and ladders, with platforms at each story; doors open inwardly.
77	PLYMOUTH. Preparation, . . .	19	—	27	Mill, 1 story and an attic; means of escape are doors and windows; width of stairs, 4 feet.
89	Spinning, . . .	16	—	94	Mill, 2 stories and an attic; means of escape are 3 stairways about 7 feet wide, and ladders, with platforms; 2 ladders run over the roof; doors open inwardly.
96	Preparation, . . .	—	40	92	Mill, 2 stories and an attic, but the attic is seldom used; no one works in it continuously; stairway 4 feet wide in tower in centre of mill, and stairway inside mill at the west end; doors open inwardly.
240	Spinning, . . .	—	9	47	Mill, 2 stories, with flat roof; means of escape are stairway in tower on front, and stairway at back of mill; also 3 ladders without platforms; doors open inwardly.
69	SALEM. Spooling, warping, slashing and web-drawing; frame-spinning, . . .	160	68	1,349	Three mills. Nos. 1 and 2 have 4 stories and an attic; No. 3 has 3 stories, with flat roof; means of escape are 7 stairways, 8 ladders and 5 bridges; width of stairways from 4 feet to 6 feet 9 inches; all doors open outwardly; ladders on ends of each mill.
238	SHATTUCKVILLE. Spinning, . . .	—	6	56	Mill, 3 stories, with flat roof; means of escape are one outside temporary stairway, 4 feet wide at bottom, and 3 feet at top; doors open inwardly.
86	SHIRLEY. Spinning and spooling, . . .	28	—	106	Mill, 2 stories and an attic; means of escape are stairway 4 feet wide in tower in centre of mill, and 2 fire-ladders; doors open inwardly.
228	SOUTH ADAMS. Spinning, . . .	15	—	144	Mill, 3 stories and an attic; means of escape are 2 stairways, extending to the third story, and one to the attic; also one ladder, with platforms at every story; doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
228	S. ADAMS—Con. Dressing,	2	—	54	Mill, 2 stories and an attic; stairway 4 feet wide, in tower; one ladder runs over the roof; doors open inwardly in the attic; outwardly in other rooms.
37	SOUTHBRIDGE. Spinning and spooling,	—	30	220	Mill, 4 stories, with flat roof; means of escape are stairway 5 feet wide, in tower, and one ladder, with platforms at each story; doors open outwardly.
37	Spinning,	8	—	258	Mill, 4 stories and an attic; means of escape are stairways 2 feet 10 inches and 4 feet 2 inches wide, in towers at each end of mill, and one stairway 5 feet 4 inches wide on side of L; also one fire-ladder on each side of main building, and one near tower at the end; doors open outwardly.
37	Spooling and warping,	22	—	94	Mill, 2 stories and an attic; stairway 5 feet wide in tower, and fire-ladders on one side of mill; doors open outwardly.
37	Drying and printing,	—	50	151	Mill, 2 and 3 stories high; means of escape are stairways 4½ feet and 6 feet wide and iron ladders outside; some doors open outwardly and some inwardly.
1	SOUTH HADLEY. Spinning,	2	—	14	Mill, 2 stories and an attic; means of escape is a stairway 4 feet wide; doors open outwardly.
82	Spinning and dressing,	34	—	355	Mill, 5 stories and an attic; means of escape are stairways 5 feet nine inches wide in tower, and 2 ladders, with platforms, at windows in each story, and one ladder, without platforms, near windows of each story; doors open outwardly.
215	SOUTH FITCHBURG. Spooling and warping,	26	—	95	Mill, 3 stories and an attic; means of escape are a stairway 3 feet wide in tower on front, and a stairway inside on back of mill, and 4 ladders with platforms; doors open outwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
106	SUTTON. Spinning and spooling, . . .	27	—	113	Mill, 3 stories and an attic; means of escape are stairway 8½ feet wide in tower, also 3 stationary fire-ladders and a good supply of movable ladders; doors open outwardly.
26	TAUNTON. Spinning, spooling and dressing, .	28	—	112	Mill, 3 stories and an attic; stairway 4 feet wide in tower, and one ladder with platforms; doors open outwardly.
200	Spooling and dressing, . . .	7	—	86	Mill, 4 stories and an attic; means of escape are stairway 3 feet 6 inches wide in tower, and one ladder, with platforms at each story; doors open outwardly.
210	Spooling and dressing, . . .	14	—	106	Mill, 4 stories and an attic; stairs 4 feet wide at each end of mill, and fire-ladders on outside of mill; some doors open inwardly and some outwardly.
80	TEMPLETON. Spinning, . . .	—	5	39	Mill, 4 stories; means of escape are stairway 4 feet wide in tower, and 2 ladders without platforms; doors open outwardly.
109	THORNDIKE. Spooling; warping and dressing, .	75	—	360	Two mills, 4 stories and an attic; means of escape are stairways in towers on front of each mill, and ladder, with platforms at one end of each mill; doors open outwardly.
242	THREE RIVERS. Spooling and warping, . . .	—	11	243	Mill, 5 stories with flat roof; means of escape are stairway 5½ feet wide; also ladders, with platforms at every story; doors open inwardly.
114	UXBRIDGE. Spinning, . . .	5	—	127	Mill, 4 stories and an attic; the means of escape are stairway 4 feet wide in tower, and 3 fire-ladders; doors open inwardly.
212	Spinning, . . .	3	—	94	Mill, 3 stories and an attic; means of escape are stairway 4½ feet wide, and 2 fire-ladders; doors open outwardly.
223	Spinning, . . .	11	—	107	Mill, 3 stories and an attic; the means of escape are stairway 4 feet wide, and 2 stationary ladders; doors open inwardly.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
225	UXBRIDGE—Con. Spinning, . . .	2	—	23	Mill, 2 stories and an attic; means of escape are stairway 8½ feet wide; every room but one opens on the ground; doors open inwardly.
101	WALES. Spinning, . . .	3	—	72	Mill, 2 stories and an attic; means of escape are stairs at each end of mill, and iron ladder running from roof to ground opposite windows in each story; width of stairs, 3 feet 4 inches; doors open outwardly.
79	WARE. Spinning, spooling and warping, . . .	61	29	808	Three mills,—two 4 stories and an attic, and one 3 stories, with flat roof; means of escape are stairways 5 feet wide in towers, and ladders, with platforms at each story; doors open outwardly.
145	Spinning, . . .	16	—	185	Mill, 3 stories and an attic; means of escape are stairway 5 feet wide, and stationary ladders with platforms on outside of mill; doors open outwardly.
233	Spinning, . . .	19	—	116	Mill, 3 stories and an attic; means of escape are stairway 4 feet wide in porch, and ladders, with platforms at each story; doors open inwardly.
127	WATERTOWN. Spinning, . . .	9	—	178	Mill, 4 stories and an attic; means of escape are stairway 6 feet wide in tower, and 5 fire-ladders,—3 on one side, and 2 on the other; doors open inwardly.
103	WEBSTER. Spinning and dressing, . . .	57	—	372	Mill, 2 stories and an attic; only 3 rooms (those in the attic) inaccessible from the ground without ladders; the largest number employed in either of these rooms is 38; stairs 4 feet 10 inches wide; some doors open inwardly and some outwardly.
169	Preparation, . . .	19	—	526	Mill, 5 stories and an attic; means of escape are stairways 5 feet wide in two towers, and one ladder, with platforms at each story; doors open inwardly; fire-proof elevator offers means of escape if the engine should be running.

Means of Escape from Upper Stories of Mills—Continued.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
201	WEST BOYLSTON. Spinning,	3	—	33	Mill, 2 stories and an attic; means of escape are stairs 3 feet 1 inch wide, and ladders, with platforms at each end of mill; all doors except in the attic open inwardly.
141	WEST CHELMSFORD. Spinning,	—	12	138	Mill, 3 stories and a basement; flat roof; means of escape are stairways in tower in front and inside stairway in rear of mill; stairways are 3 feet and 5 feet wide; there are fire-escape ladders on outside of building; doors open outwardly.
128	WEST SPRINGFIELD. Spooling, warping and dressing, . .	46	—	313	Mill, 4 stories and an attic; means of escape are stairway 4½ feet wide in tower, and 3 iron ladders, with platforms, in front of mill, and 1 on each end; all doors open outwardly except the one in the attic.
119	WEST WARREN. Spinning and dressing,	32	—	244	Mill, 4 stories and an attic; means of escape are stairways 4 feet 7 inches and 5 feet wide; also fire-ladders, with platforms at every story; part of the doors open outwardly and part inwardly.
204	WHITINSVILLE. Spooling, warping and dressing, . .	17	—	153	Mill, 4 stories and an attic; means of escape are stairways from 4 to 5 feet wide and a good supply of common ladders; doors open inwardly.
70	WINCHENDON. Spinning, spooling and dressing, . .	26	18	190	Two mills,—one, 2 stories and attic; and the other, 3 stories, with flat roof; means of escape are stairways 4½ feet and 5 feet wide, and iron ladders to every room; doors open inwardly.
22	WORCESTER. Spooling and warping,	—	7	66	Mill, 3 stories; means of escape are stairways four feet and 5 feet wide, and one fire-ladder on the outside of building; no doors except on the lower floor; those open inwardly.
153	Preparation,	—	11	42	Mill, 3 stories, with flat roof; means of escape are stairway 4 feet wide, in tower, and 3 iron ladders, with platforms; doors open inwardly.

Means of Escape from Upper Stories of Mills—Concluded.

Office No. of mill.	NAMES OF PLACES AND ROOMS.	No. employed in attic.	No. employed in upper room, not an attic.	Whole No. employed in mill.	Means of Escape in case of Fire or Panic.
203	WORCESTER—Con. Spinning, . . .	-	3	23	Mill, 4 stories, with flat roof; means of escape are stairways 2 feet 3 inches and 4 feet wide, in 2 towers; doors open inwardly.
207	Spinning, . . .	-	40	73	Mill, 3 stories, with flat roof; means of escape is one stairway 4½ feet wide; the elevator might be used in case of fire; doors open inwardly.
208	Winding, . . .	-	30	45	Mill, 3 stories, with flat roof; means of escape is a stairway 3 feet 4½ inches wide; doors open inwardly.
214	Spinning, . . .	8	-	93	Mill, 2 stories and an attic; means of escape are stairways from 3 feet to 5½ feet wide; doors open inwardly.

CHAPTER IV.

DOES MASSACHUSETTS REQUIRE A SYSTEM OF FACTORY LEGISLATION?—RECOMMENDATIONS.

Whether the condition of the textile manufactories of the Commonwealth, or the condition of the operatives employed in them, is such as to require a system of factory legislation substantially like that of England, is a question that has been asked many times by legislators, labor commissions, and those who interest themselves in the amelioration of the real or fancied degraded state of mill operatives, and the question has received at our hands the most careful consideration; and while we believe that the legislature can and ought to do much in this direction, we do not believe that such a factory protective system as we have seen the mother country build up, needs to be inaugurated.

There are many evils existing among us that should be

corrected ; some gross wrongs which should be righted ; and these we will point out. The facts given in the preceding chapter of this part fully exhibit some of them ; but there are others which exist, and which to a degree were brought out in Part V. of the fifth report of this bureau.

There is not now, nor has there ever been, that state of affairs among laboring communities in this state which existed in England at the time of her first protective laws, and which prompted the action of men like Sir Robert Peel ; and the great mistake which has been made by men who have sought to introduce reforms in our own factories, is in thinking that what has proven to be so good in England should also be good in New England, forgetting all the time that the dire conditions which stimulated English legislation never had an existence here.

This statement is easily to be proven by reference to the chapter with which this part begins, entitled "Chronological History of English Factory Legislation," which we carefully prepared and inserted because nothing of the kind exists, and because so many interested in labor movements have felt the want of something of the kind, and because in treating the subject at the head of this part, and of the education of children employed in manufacturing establishments, such brief and concise narrative was essential.

The horrid condition of children employed in English works of various kinds years ago, has rarely if ever met a parallel in this country ; and still, when we visit our own mills, the warmest sympathy is awakened at once for all, and especially for the little ones we see travelling about, and we are led to inquire what the legislature of a state can do, and upon this inquiry we have to a large degree satisfied ourselves.

There can be no question as to the constitutional right of the people to enact all requisite factory laws, and of such a character that the object sought to be reached can be reached effectually.

It is too late, after the state has said no man shall establish a nuisance to the injury of his neighbors, or that all children shall attend school, or that this person may vote and that one shall not, or has said the many things in form

of laws which regulate private business and protect public convenience,—it is too late, after these things, to say the state can not step in and relieve any portion of its children, or enact laws to improve their condition, mentally, morally, socially and physically.

It is very evident that increased and advanced civilization brings with it increased and advanced legislation; and that the more enlightened the government, or the more nearly the government approaches the absolute expression of the will of the people, the more complicated the machinery by which the government is administered. And further, the higher the type of civilization of a state, the further out must she reach her arm to take under her protection the waifs of society, the depressed in estate, and the helpless in all directions; and the age is not far in the future when that state which refuses to obey the demands of "higher law," will indeed be considered effete, whether a monarchy or a republic.

There is no surer reflection of the growth and progress of civilization than that found in the statutes of the world. The enactments of the legislature of a nation clearly indicate not only the growth of civilization, but the real hold of religion itself upon the state's subjects; and by the same sure means can the condition of the laboring masses be clearly read. Legislation always mirrors public sentiment.

What, then, can and ought the legislature of our state to do? There are a few wrongs to be righted, and the more speedily the laws are enacted for such purpose, the more speedy will be the returns.

First.—Children have no right in Mills at all. We have discussed this fully in Part I., so far as their education is concerned, and incidentally as to their status as workers. We are aware that this proposition will meet as much, if not more, opposition from parents as from employers, but the truth is the truth just the same. The same arguments which poor people advanced during the growth of our common school system, will be brought to bear upon this; but the state said poverty shall not prevent the education of the state's children, and it ought now to not only repeat the

statement, but enforce the principle, and go further and issue the command that her children shall be trained to be good citizens.

The employment of children of tender age, is, perhaps, with one exception, the greatest evil that exists, so far as manufacturing concerns are concerned, and we believe one of the most needless evils.

The manufacturers of England, when at times they were deprived, by the laws, of child-labor, found the deprivation to be of advantage, for they either found machines to do the same work, or, what was better, found that one adult would do the work of several children; and while the adult would not cost as much as the several children, still he could command better than his former wages. We believe the entire exclusion of children from our mills would result in an increase in the wages of adults, while there would be no decrease in production.

If it is not the plain duty of a state to see to it most earnestly, that the young have an opportunity to grow up to education and good citizenship, we see no reason why *she* should be much concerned for them, after they have arrived at maturity. Economy demands that the cheapest method be adopted, and we believe the early age is the most favorable in which to begin to train up citizens, and also the time when the least expense would be incurred.

Second.—The Hours of Labor. The legislature, by Act of 1874, has virtually established the day's work at ten hours, and a further reduction should not be attempted till other matters have been dealt with; and, in fact, we believe, that when the other matters have received the attention they deserve, the hours of labor will take care of themselves.

The law of last year was passed under similar circumstances which attended and followed the passage of the English ten-hour law. The latter went into effect almost immediately, not so much from the desire of manufacturers, as from the effect of the financial crisis which existed.

Working-time was reduced on account of the times, by and for the manufacturers themselves, and when the crisis had passed, it was not found easy to return to the old hours, and

so the ten-hour law came into operation with facility. And it is or will be the same in this state; and although a few mills have sought to evade its provisions, we anticipate a general and easy acquiescence in its provisions, and as time advances, the wisdom, or the want of wisdom, of the legislature will be proven. At present the only serious wrong which exists, so far as working-time is concerned, affects married women, whose case will be treated under its appropriate head, and young children, already considered.

Third. — The Protection of Operatives from Dangerous Machinery. Manufacturers have made great progress in this direction, and are deserving of great commendation for their zeal in guarding the lives and limbs of those they employ. Yet it is noticeable in many parts of the state, that, either from mercenary motives, or from want of appreciation of the condition of mill-hands, they have given but little, if any, protection. An act should be passed, specifying what protection should be made. The principal points would be gearing, belting, elevators and drums, while the weaving-rooms might, perhaps, without detriment, be relieved of the constant presence of steam. Fire-escapes should be provided more generally, and of a more useful kind than are usually found. In another chapter of this part will be found statistics bearing upon this point, as well as an account of the disaster at Granite Mills, in Fall River, an argument sufficient in itself to stimulate the most advanced legislation.

The male operatives and workmen, in all manufacturing establishments, should be organized into fire-parties, each squad to have its particular duties to perform, in case of fire; and all to be thoroughly instructed in the use of the fire-apparatus of the manufactory. The Pacific Mills, of Lawrence, the Blackstone Mills, and others, have admirable systems, which we heartily commend to all.

If mills could be built with fewer stories, the danger from fire would be greatly lessened, and operatives saved great fatigue. Perhaps the best permanent fire-escape consists of a slanting ladder, with side rails run up the face, properly located as to windows, each story having its outside platform and slanting ladder to connect with the next story; the usual

perpendicular ladder does not offer, except in a small degree, the advantages of the slanting construction, and for safety the latter far exceeds the former. Besides these permanent ladders, each story should be abundantly supplied with portable fire-escapes. Of course, each floor should have ample means for extinguishing fire.

Ventilation should be insisted upon. In the fifth annual report of this bureau, we clearly pointed out the requisite amount of air to secure the healthfulness of operatives.*

Operatives are often greatly opposed to any ventilation which introduces cold air directly upon them; they are extremely sensitive to chills, the result of the nature of their employment. Many factories in this state have no means of ventilation except open doors or windows; but ventilation does not consist in letting cold air into a hot room with a rush. Fresh air must be admitted gradually and be dispersed equally; the change of air should not be by fits and starts, but should go on quietly and constantly. It is satisfactory to know that the average air space in the various rooms of the factories in this state, is ample,† but the means for gradually changing the air are often either entirely inadequate, or dangerous on account of the draughts of air.

We could wish it would be proper to insist that the present infernal machine called a shuttle, should be replaced by a self-threading one, from which no harm is received by the weaver sucking lint into the lungs. Such an one is in use in the Hamilton Mills of Lowell. Employment in attics has been fruitful of fatal consequences. Operatives, by the usual faulty construction of mill buildings, employed in the attic rooms, have no means of escape, as a rule, in case of fire. The desire to economize space, usually results in too much crowding of machinery even in our best mills. This is an evil which should not be allowed to exist. The presence of dust and lint has caused many an operative to fall into an early decline. There is no need of the presence of much dust or fibrous atoms in the rooms of a mill, and many of our modern corporations have taken great pains in introducing devices, by which the happiest results have been secured.

* Rep. Bureau of Statistics of Labor, 1874, p. 116.

† Fifth Annual Report Bureau of Statistics of Labor, pp. 114;115.

Fresh, pure air, free from dust, steam and heavy particles of fibrous matter, should be insisted upon; and such condition, with easily constructed and well known devices, might be secured with little difficulty and small expense.

Fourth.—The Employment of Married Women is at once the most harmful wrong, and the most difficult to reach. If such an expression would not be considered as bordering on the insano, we should say at once, that married women ought not to be tolerated in mills at all. Vital science will one day demand their exclusion; but we certainly can recommend the regulation of their work. It is not rare that married women remain at the loom till a few days before confinement, and, what is still more wicked, are found at their old posts in so short a time afterwards, that, not only is decency shocked and outraged, but crime to the offspring is committed, that a few dollars may be earned. Children born under such circumstances must fare badly; for it is, of course, necessary to put them out during the day, or, what is equally as bad, leave them in care of other children too young (if such a thing occurs) to be employed in the factory. We do not know that any regulation can be established which will reach this evil; for it is an evil that is sapping the life of our operative population, and must sooner or later be regulated, or, more probably, stopped.

We find it a difficult subject to treat, so many obstacles come up, so many seemingly insurmountable barriers, so much that smacks of sentimentalism, but still speaks to one's highest appreciation of real justice and mercy, and to one's sympathy for the helpless who now must be raised in such a way as to entail constant expense, when, by proper treatment and deprivation from immediate earnings, comfort and strength for old age would be secured. It is a knotty point, and one which must demand the attention of philanthropists and law-makers, as it already has of mill-owners, and which will soon call for serious consideration; but it is so delicate and so knotty, we can at the present time do little more than enter an earnest appeal for this class of workers, which has, as a class by itself, been overlooked, in the desire to establish some more noisy reforms. To be sure, married women

have received, or will receive, what benefits accrue from the ten-hour law; but when it is considered that no ten-hour law can ever be put into practical operation by the mother of a family, even when she has nothing but her family to attend to, it will be readily seen how utterly impossible it is for such law to reach the woman who does ten hour's work in the mill, cooks for her husband and children, and cares for the household. It is a slavery which must be abolished or alleviated; and, if we succeed in drawing the attention of earnest, practical men to the subject, we shall have no fear but the intelligence of the citizens of Massachusetts will, at an early day, remove the evil.

Briefly stated, the above are the principal features which should attract the careful consideration of the legislature. We have called them evils and wrongs. We do not mean to be understood as attributing them entirely to the manufacturers, because we know well that in many instances, as in the employment of young children, the fault lies with the parents, and we would, therefore, legislate for both; with married women, the fault is almost entirely their own.

To remedy what we have referred to, requires, it seems to us, a simple, comprehensive factory act, which shall clearly define the duties of mill-owners, as to the protection of machinery, ventilation, etc., of rooms, fire-escapes and the employment of children, and, if possible, of married women, and the regulation of their hours of labor; and which should also clearly define the duties of parents; the law should provide fines for both owners and parents for violation of its provisions; a suitable number of inspectors should be provided, to see that all the provisions of the law are fully carried out, and also to see that the laws relating to the education of children of operatives are enforced.

In our estimation, one chief inspector with deputies in manufacturing centres, say one each at Lawrence, Lowell, Salem, Newburyport, Fall River, New Bedford, etc., would constitute a valuable and sufficient force. The duties of these inspectors, also, should be clearly defined.

The chief inspector should be a medical man having a thorough knowledge of sanitary matters; while he should be sufficiently versed in mechanics to enable him to understand

the proper relations of parts of machinery to other parts or to **the** whole ; above all, he should be a man of sound judgment. **He** should not be selected 'because he has done anything for "the party," but because of his qualifications in the directions **we** have indicated.

With such an act, looking to the sanitary surroundings of mill-hands as well as to the other matters we have referred to, we do not believe much fault would be found ; in fact, we believe many mill-owners would hail a well-digested statute, that should bear on all alike, and that should clearly establish the status of factories. We believe they would be glad, as a rule, to have all such matters fully established by law, and that they would, in a large degree, be ready to co-operate with the corps of inspectors. They have hitherto been on the defensive ; there has been too much antagonism, too much offensive on both sides ; what is needed is co-operative measures, by which both mill-owners and operatives can be shown their rights. Of course, we do not expect to see the millennium in factory matters ; but we thoroughly believe that a judicious enactment would do much toward harmonizing the antagonistic views of differently interested parties.

The experience of England assists us wonderfully ; but, as we have stated, no such ponderous system of factory legislation is needed here. Our factory growth is too recent, does not reach far enough into the past, to call for such a system ; and further, we have in this state too many enlightened, liberal-minded and large-hearted men among our mill-owners to require the infliction of so extensive a system. It should be borne in mind by all operatives, reformers and legislators, that what our mills have done for the alleviation of wrongs has been done independently of law ; that the really superior mills are, as we have indicated, obliged to suffer on account of the short-comings of the poorer ones ; from the latter would come serious opposition to such legislation.

When mill proprietors come to us seeking information as to the means which have been employed to give to the operatives a share of the earnings of the mills, we begin to believe the time is not far distant when the majority will be not only willing, but earnest, in the desire to do all in their power to speed on the good work. We are not indulging in rose-

colored views, because we appreciate thoroughly the amount of work to be done,—the public sentiment to be created or stimulated, necessary to accomplish what we have recommended. But what we have said is founded on our observations and experience in relation to the matters we have dwelt upon.

We trust the legislature will see to it that active work is done, and not leave the question longer in the realms of recommendations. We, therefore, commend to the attention of the general court the matters we have referred to, and to assist in reference have embodied, in brief outline forms, the principal points which should enter into the provisions of a

FACTORY ACT.

The belting, exposed shafting, gearing and drums of all manufacturing establishments shall be securely guarded.

No machinery, other than steam-engines, in any such establishment shall be cleaned while running.

Elevators in all such establishments shall be supplied with well-protected safety-catches and self-closing hatches.

For every one hundred feet, ends and sides of such establishments, and to each story, there shall be on the outside a fenced platform, each platform to be connected with the one above it by a slanting ladder guarded by rails, and with the interior by windows or doors.

For every twenty persons employed there shall be one rope, or portable fire-escape. All outside doors shall open outwardly or slide.

Each story shall be supplied with apparatus for extinguishing fires,—water-buckets, flooding hose or pipes, hydrants, etc.

All male operatives shall be organized into fire-parties and trained to the use of the fire apparatus of the establishment.

No person shall be constantly employed in the attic rooms of such establishments, unless such rooms are thoroughly protected by suitable fire-escapes, as herein provided; "story" shall comprehend "attic."

It shall be the duty of employers to see that rooms are amply ventilated and kept clean; that water-closets are thoroughly cared for, and that noxious odors are deodorized.

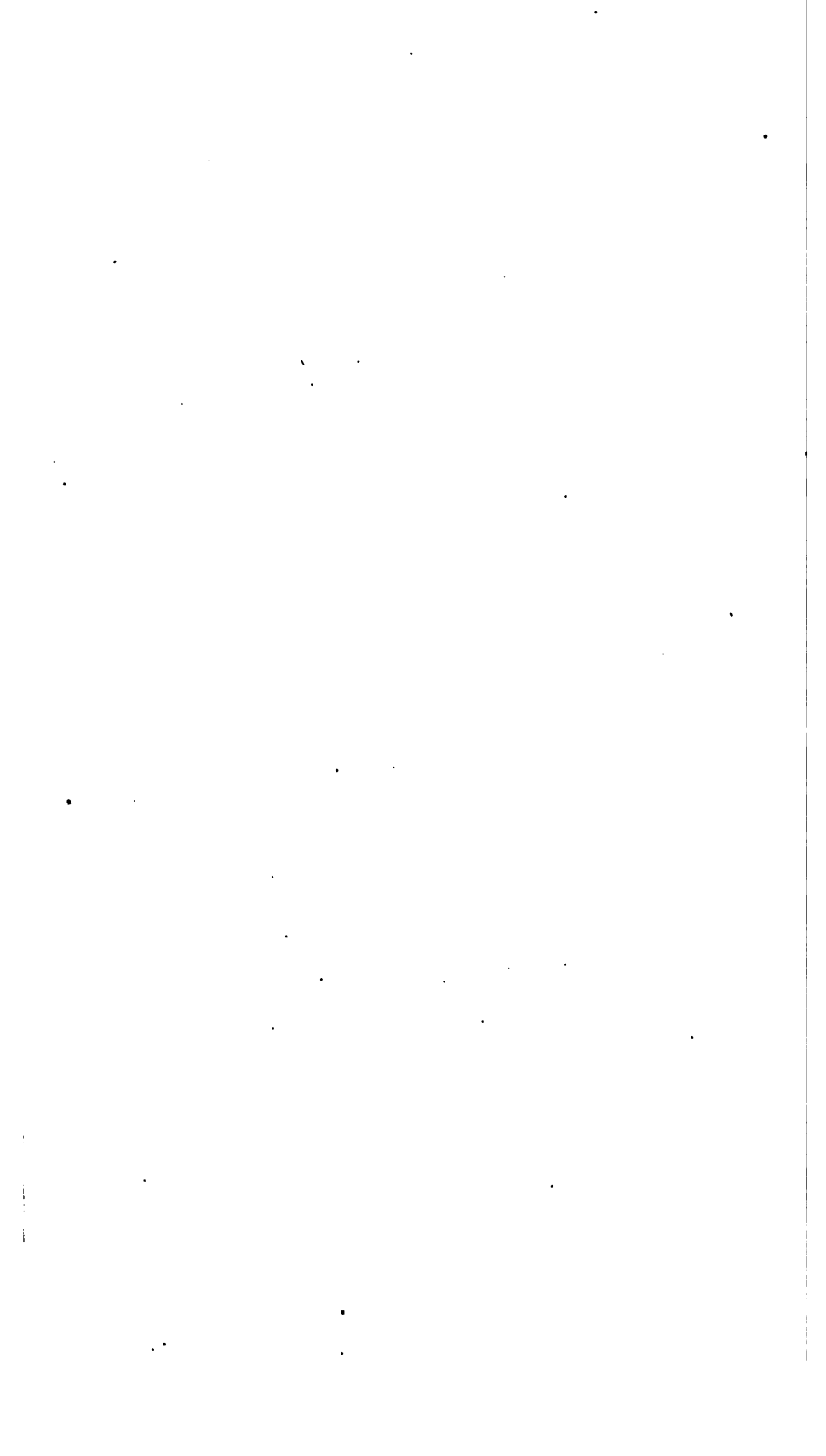
No married woman shall be employed in any such establishment for at least two months subsequent to the period of confinement; and on returning to work shall, to this end, present a physician's certificate to her employer.

Any person violating any of the provisions of this act shall forfeit for every such offence not less than twenty nor more than one hundred dollars.

For the purpose of carrying into effect the provisions of this act, the governor, by and with the consent of the council, shall, on the passage of this act, and thereafter, biennially, in January, appoint a suitable person having practical knowledge of sanitary matters and of mechanics as chief inspector of factories; and such chief inspector shall appoint not less than three nor more than seven deputy inspectors. The salary of the chief inspector shall be \$3,000, and that of his deputies \$2,000.

The duties of the chief inspector shall be to enforce the provisions of this act, and of any acts relating to the employment and education of children; and he shall report to the governor annually, in January, all proceedings and doings under the same.

No action at law shall be brought against any manufacturer until after due notice to him of the breach of any of the provisions of this or the employment and education acts; and all actions under any of said acts shall be brought in the district courts, or before trial justices who shall have plenary jurisdiction.



PART IV.

CONDITION OF WORKINGMEN'S FAMILIES.

CHAP. I.—INTRODUCTION.

CHAP. II.—EXTENT OF OUR INVESTIGATIONS, AND THEIR REPRESENTATIVE VALUE.

CHAP. III.—INDIVIDUAL PRESENTATION OF THE CONDITION OF FAMILIES.

CHAP. IV.—COST OF LIVING.

CHAP. V.—RENTS.—CONDITION OF WORKINGMEN'S HOMES.

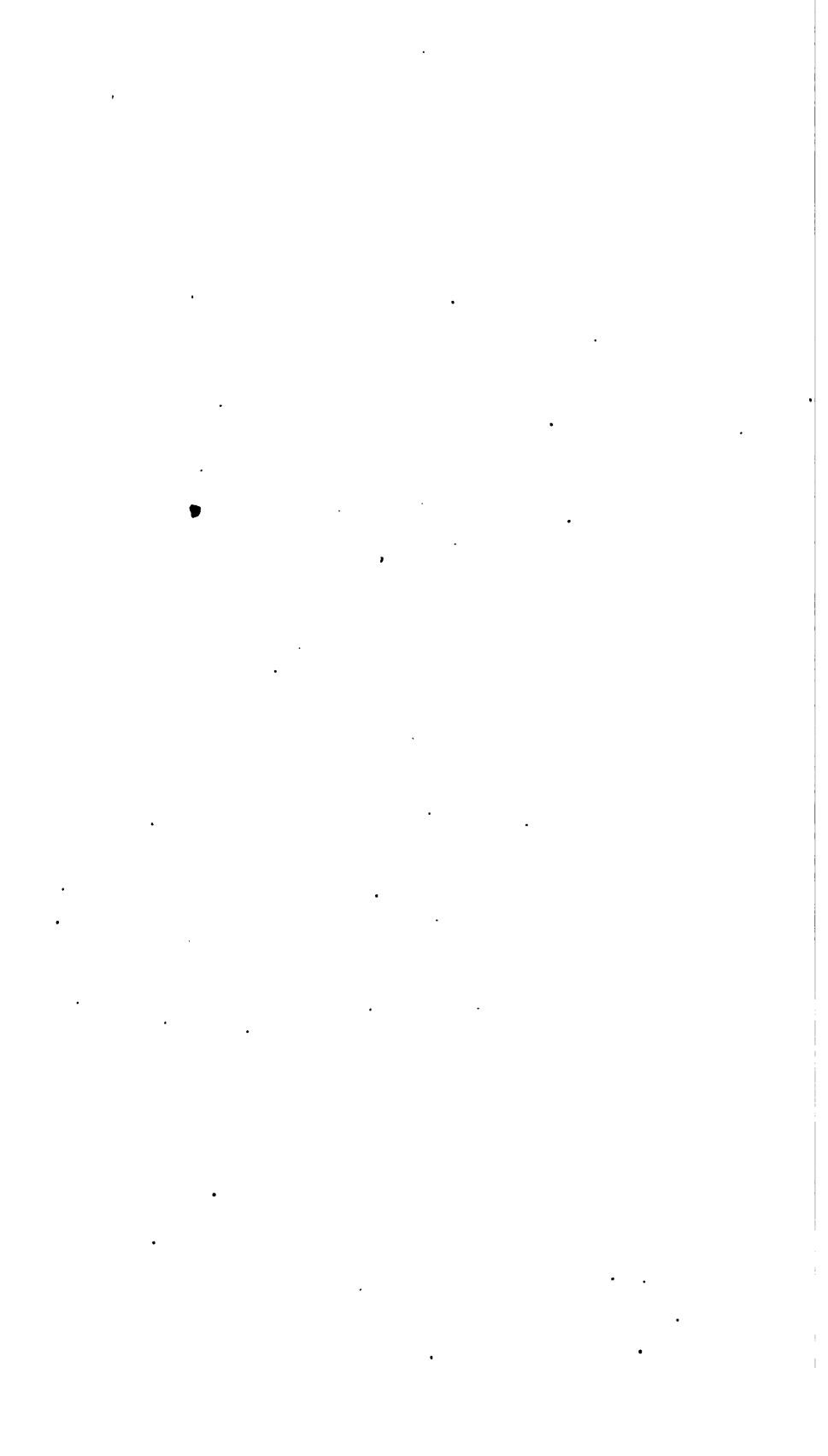
CHAP. VI.—FUEL.

CHAP. VII.—FOOD.

CHAP. VIII.—BOOTS AND SHOES.—DRY GOODS.—CLOTHING.

CHAP. IX.—SUNDRIES.

CHAP. X.—GENERAL SUMMARY.



PART IV.

CONDITION OF WORKINGMEN'S FAMILIES.

CHAPTER I.

INTRODUCTION.

In Part IV. of the Bureau Report for 1874, we endeavored to show the wages of workingmen in Massachusetts, and their proportion to wages paid in foreign countries for similar work.

Bearing in mind that as to whether wages are high or low, depends, not on their absolute amount, but on their purchase-power, in Part VI. of the same report we aimed to show the prices of the essential items entering into a workingman's cost of living, and their value in foreign countries; deriving therefrom a series of tables showing the purchase-power of a stated sum in Massachusetts and these foreign countries, as regarded the indispensable requirements for the maintenance of a family.

In Part VIII. we gave a table on the cost of living, embracing returns from forty-one families in this country and Europe.

In the presentation in Part IV. we gave the average weekly wages in the branches of business inquired into. They were statements of wages and not of earnings, and it was not expressed or meant to be implied that the multiplication of the average *weekly wages* by fifty-two (weeks) would give the average *earnings* either in this state or in foreign countries. Our foreign returns were drawn from the statements of employers, and the element of time employed was not stated. Designing to make a comparative

statement, we were obliged to draw our home information from similar sources, and after the same plan. The item of *earnings*, as distinct from average weekly, monthly or yearly wages, can be truthfully obtained only from workingmen themselves. For, although one manufacturer may run his establishment but eight months in the year, it is not safe to predicate the yearly earnings of his employés upon that, as many would find employment during the remaining four months in other establishments in the same business, or engage in other work. We desire to make this explanation, as our figures have been multiplied, as previously stated; and the result being much in excess of *earnings* in various trades, an apparent confliction has arisen, it appearing to many that our aim was to make a fictitiously good showing of the condition of Massachusetts workmen. The returns mentioned hereinafter are based entirely on earnings, from all sources, and there can consequently be no opportunity for a misunderstanding. In furtherance of our purpose to show the actual condition of the workingman in Massachusetts, and his comparative situation as regards his fellow-laborers in other states and foreign countries, in this part of our report we present the results of personal investigation, by the agents of this bureau, into the condition, social and pecuniary, of three hundred and ninety-seven families of workingmen in this state. The heads of the families considered are wage-laborers, men of family, and, with comparatively few exceptions, having children dependent upon them for support.

We have designed to make this investigation exhaustive, and we think the elaborations which we present in Chapters IV. to X. inclusive, will satisfy the most exacting student of social economy.

Chapter IV. illustrates cost of living in the aggregate; Chapter V., rents, the interior appearance and exterior surroundings of homes; Chapter VI., cost of fuel; Chapter VII., food; Chapter VIII., boots and shoes, dry goods and clothing; Chapter IX., sundry expenses; and in Chapter X., a comparison is instituted of the results made manifest with an economic law propounded by Dr. Engel, of the Bureau of Statistics, Berlin, Prussia, and confirmed by inquiries instituted

by Ducpetiaux, in Belgium, and by Le Play, in France, the German districts bordering upon it, in Switzerland and in Savoy. This, the final chapter, also contains some observations upon the failures and capabilities of the wage system, which, being theoretically undeniable, gain practical weight after a full comprehension of the facts deduced from and established by our investigations. If we have failed to specially present valuable facts which the returns make manifest, the individual statements contained in Chapter III., and which show each family as a unity, being transcripts of our original data, will enable those desirous of so doing to manipulate as they may deem fit.

"It seems natural and just that a man's labor should be worth, and that his wages should be, as much as, with economy and prudence, will comfortably maintain himself and family, enable him to educate his children, and also to lay by enough for his decent support when his laboring powers have failed."

Theoretically, there can be no dissent as to the truth of the above, and practically speaking it is equally axiomatic; unfortunately in this, as in many other cases, theory and words are not fully supplemented by actual fulfilment. While our "natural and just" assumption needs no argument or proof, it may be well to show that this truth is not the result of Christianity, civilization or moral progress; for its points, excepting the one of education, were acknowledged by pagans, by the uncivilized, and by those whose moral ideas, if not wanting, were not manifest. To illustrate this, we will make a brief parallel, preceding it with the remark, that even among us a man's right to mental food and the means to secure it, lacks many steps yet of complete attainment.

Under the patriarchal form of government, the leader of the tribe required labor from his family or servants; but clothing, food and care in sickness, infirmity or in old age, when their laboring powers had failed, were assured them. The value of education, or its need, was not conceded for the masses in those days.

Under the feudal system, man in his serfdom was yet sure of bodily care. The petty rulers feasted their retainers,

clothed them, protected them from the assaults of enemies, and in their old age, or infirmity, provided for them. Education of them, or of their children, was beyond the progress of the times.

Under the system of bondage, the bodily wants of the slave were cared for; education, which means freedom, was certainly not deemed advisable by the propagators or sustainers of the system; but under the influence of gain, if from no higher motive, provisions for the bodily care of the unhappy workers, even when unfitted for labor, were made and enforced.

Our previous statement being acknowledged as true, it follows that its opposite can not and should not be true, and that no one should receive such small compensation for his toil, that even when expended with economy and prudence, it fails to pay for his necessary cost of living; rendering him an involuntary debtor, subjecting him continually to the demands of creditors who wish pay for the necessities of life he has consumed; obliging him to overwork his wife with home and outside duties; forcing him to deprive his children of education, that he may supply by their labor their cries for bread; finally, bringing him to the poor-house, to the state of a continual recipient of charity, or entailing him as a morally not-to-be-got-rid-of burden upon his children, relations or friends.

The broad and pertinent inquiry is, Does the wage system, as now existing in the world, do what it is acknowledged is "natural and just" and right? and if not, in what way can its workings be improved so that it will do what no one can deny it ought to do?

The results of our investigations all bear upon the point in question. The wage system exists and must exist until something better takes its place. Every policy which does not build up as it pulls down must be suicidal and devoid of fruitful results or permanent benefit. Our particular inquiry, our particular work, is to show the results of the wage system in Massachusetts, so that from a full understanding of what is, individual action, united action, and it may be legislation, may devise some plan for the better working of the wage system, and the amelioration of the condition of the wage laborers of the Commonwealth.

The returns, as given individually in Chap. III., have been presented, seemingly, in every possible way, to show the facts they contain; the tabulated results given in Chaps. IV. to X. inclusive, may be briefly summarized.

Chap. IV. deals with the cost of living, or, in a fuller sense, the relation between earnings and expenses.

We show, primarily, in how many cases the head of the family is able to support his family by his individual earnings; also, in how many families the labor of the wives or children is found necessary in order to obtain the necessities of life. As a more perfect presentation of the facts, the result is shown as affected by place of residence, occupation, skilled or unskilled labor, and by nationality.

Next we present the averages of the husband's or father's individual earnings as influenced by residence, nature of occupation, and kind of labor and nationality. The average of wives and children's earnings is then shown with the same regard to minuteness of statement, which manner of subdivision extends to the presentation of averages of combined earnings.

From a comparison of the above, we find the respective percentage of the combined earnings as contributed by the father, mother or children, and learn how much must be added to the father's income in order that his wife may remain at home and his children attend school. As a practical basis for social economists, labor reformers or legislators, this proportion is one of the most vital afforded by our returns, and should be borne in mind in the consideration of Part I. of this report.

The wages of children as affected by their ages are shown, and the point demonstrated as to which sex has the greater wage-producing value, and also at what age the labor of the child is most productive of money-return.

A statement of the number of children at home, at school and at work, is made in a manner to show the proportion to occupations and to nationalities. A particular showing is made concerning wives at work, with remarks concerning the prevalence of labor, by mothers of families, in England, and its baneful results.

The cost of living expenses are then presented by averages,

stated with a reference to residence, occupation or nationality.

Earnings and expenses are then compared, with regard to residence, occupation or nationality, and the respective number of families shown, in which the earnings of the father are more than, equal to, or less than living expenses; also in how many cases the combined earnings are more than, equal to, or less than the cost of living. The next presentation is the cost of living as influenced by size of families, subdivided according to the number in family, showing the average earnings and expenses, with the particular outlay for food, clothing, etc. From the figures obtained, by a series of graduated proportions, we are enabled to determine, with some degree of exactness, the additional expenditure which the addition of each child to the family occasions.

The earnings, individual and combined, and the cost of living, are then graded with regard to occupations; the total earnings and total expenses are derived therefrom, and the average money surplus or possible saving deduced, and the debt of those who are in arrears. These figures are supplemented by remarks concerning savings, extravagance, bad habits and the acquiring of a competence.

With the design of showing the workingman's condition in localities according to their geographical position, and independent of population, we have formed several groups of towns and cities, and make manifest in which section of the Commonwealth the wage-laborer is most unfavorably situated.

For purposes of comparison, we then introduce several authentic statements of the cost of living in foreign countries and also in other states of the Union.

The chapter closes with a summary of results, in textual and tabular form, drawn from the elaborations of our bureau investigations, and from the comparisons above referred to.

Chap. V. takes up the subject of rents, and the condition of workingmen's homes; meaning by condition their interior appearance, exterior surroundings and all sanitary arrangements for the procurement of light, pure air and freedom from dampness. With due regard to place of residence, nature of occupation and nationality, we present the figures denoting the average, highest and lowest rent paid. The aver-

age, highest and lowest size of tenements is similarly shown. We then form gradations of rents and sizes of tenements, and, instituting a comparison between the results obtained, derive the average rents for three, four, five or more roomed tenements for different occupations and kinds of labor. We are then enabled to discover the important proportion which shows the ratio of rents paid to the father's individual earnings, and also to the combined earnings of the family's working members, and this point is made indicative of the various occupations and kinds of labor. Statements of rents in foreign countries, furnishing data for comparisons, then follow.

The condition of dwellings, and nature of surroundings and sanitary provision, is shown to be good, fair, poor, bad or very bad; and the number is given of those found, respectively, in the states mentioned, with the usual specification of place, occupation or nationality.

A statement of the general condition of workingmen's homes in several cities and towns in Massachusetts, and information of the same nature concerning them in some fifty cities and countries in Europe, Asia and South America, with the consequent comparisons, and some unavoidable conclusions, completes the chapter.

Chap. VI. is devoted to the consideration of the cost of fuel for cooking and heating purposes, and the average expense, as regards places, etc., is arrived at. Remarks follow concerning the kind of fuel used, and the means of obtaining it. A presentation of some facts concerning the cost of fuel in foreign countries finishes this division of our subject.

Chap. VII. considers the outlay for food in general, and also the amount expended for groceries, meat, fish and milk, which are prime necessities. The average cost for food in the aggregate, for groceries, and for the other items above mentioned, is given as regards places, occupations and nationalities. The consumption of meat is considered, and the number of times daily it is partaken of is shown by a general average and by a special presentation of each occupation. The nature of the food used in foreign countries forms an interesting statement, and, by a series of comparisons, the "higher level" of our workingmen in this respect is made

manifest. The larger quantity of food consumed by them, its better quality and greater variety, form by no means an unpleasant showing.

Chap. VIII. exhibits the average outlay for clothing, dry goods (some for housekeeping purposes) and boots and shoes, in the various occupations and kinds of labor.

Chap. IX. deals with a class of expenditures differing from those enumerated previously. Those were needed for the care and support of the body; but "man does not live by bread alone," and an outlay for "sundries" is as essential to happiness as the expenditures for food and shelter are necessary to preserve life. With explicitness of detail as regards occupations and kinds of labor, we show the average expenditure for furniture, carpets, books and papers, societies, religion, charity, sickness, care of parents, and the many incidental requirements for making a home and adding to its comfort, cheerfulness or beauty. As an indication of what "sundry" money has been expended for in previous years, we state the number of families, subdivided according to occupations and kinds of labor, possessing sewing-machines, pianos or cabinet organs, or having one or more carpeted rooms. A statement of families attending church is given, but with no intention of showing the religious habits of the families visited. Those enumerated all pay pew-rents, whether the amount is put down to religion or included in sundries, and the fact of their being able to, and to dress accordingly, is the information which we desire to convey. We will add, however, that the exhausting nature of the weekly labor performed in some trades leads the father to make Sunday a day of physical rest, even when his means would allow the necessary money outlay for pew-rent and proper clothing.

In Chap. X. we come to the consideration of aggregates, having devoted Chap. IV. to the consideration of earnings and expenses in their manifold relations, and Chaps. V. to IX. inclusive, to details as regards cost and manner of living. Taking as our basis of comparison, Dr. Engel's economic law, mentioned previously, which shows the percentage of a workman's income necessarily expended for his cost of living, and the percentage which remains for education, religion, charity, legal protection, care of health, comfort and mental

and bodily recreation, we show its agreement or disagreement with statements drawn from our returns; the latter being based on the father's individual income, the family income, on occupations and kind of labor. We then make plain what our returns show as demonstrative of our workingman's "higher level" as regards his manner of living, even if his smallness of money-saving shows a greater comparative outlay to maintain it.

Bearing the two great principles thus deduced in mind, and giving each its full meed of influence, the final comparison is the *result* of the wage system in Massachusetts with the system itself; and, with the desire at the same time that we demonstrate the system's weaknesses, its failures and its crimes, to develop its capabilities and show how within itself it contains the means for righting many wrongs, we close our consideration of the entire subject with a recommendation, and argument, reinforced by facts, in its support.

The information contained in Chaps. V. and VII., relating to the condition of workingmen's dwellings and their food, in foreign countries, is mainly derived from reports made to the English government by H. M.'s consuls, in response to a circular of inquiries calling for personal investigation and report on these subjects.

From information gathered by Hon. C. C. Andrews, United States minister to Sweden and Norway, and Hon. Edward Young, chief of the United States Bureau of Statistics at Washington, we have also derived many valuable facts.

The foreign data received from time to time by this bureau, even if oftentimes lacking in methodical arrangement, is always minute in detail, and its reliability properly vouched for. Many facts, given in succeeding chapters relating to places in the United States, were the results of investigations made by English consuls; and while we should prefer to derive our information from home sources, no state that we are aware of could supply us with what we desired. Pennsylvania and Connecticut have bureaus of statistics of labor; but they have not extensively investigated the subject we are considering. In fact, this bureau has approximated more nearly to the plans of foreign investigators (whether acting under government or voluntarily), in its manner of working

and results accomplished, than any other in this country, with the possible exception of the Bureau of Statistics at Washington. The similarity springs, not so much from actual imitation of foreign forms, as from the fact that, with a common end in view, the simplest way of obtaining necessary facts has been adopted by both ; and, as an illustration of this assertion, it will be seen in Chap. X., how particularly our deductions, drawn from our returns, compare with those made by the Statistical Bureau at Berlin, Prussia.

The extent of our investigations, their consequent representative value, and the decided evidence they give of being an index of the whole state as regards the condition of wage-laborers, is fully shown in the succeeding chapter.

CHAPTER II.

OF OUR INVESTIGATIONS, AND THEIR REPRESENTATIVE VALUE.

Fulness of investigation and minuteness in presentation, both coupled with accuracy, are prerequisites of valuable statistical information. With reference to the subject with which this part of our report deals, it would be truly said that the cost of living of no one family could be taken as representative of the expenses of all in the state. So, also, if the expenses of two families were found, and they were averaged, still they would not be considered as fully indicative, though approximating more nearly to the correct figure than the one. The natural inference would then be, that, to get a reliable average, all the families in the state must be investigated.

But this inference is more theoretical than practical. The truth of this assertion becomes apparent, when it is considered that in any one city or town there is an approximative equality in wage among artizans of the same occupation, and a similar equality in cost of living in each grade of the working-classes. If there are twenty thousand machinists in the state, of which two thousand are in Boston ; and if,

by examination, we find that the average expenses of fifty machinists in Boston are seven hundred dollars yearly and the average earnings seven hundred and fifty dollars yearly, in the absence of time and money for a complete inquiry into the state of each one of the twenty thousand, it must be accepted as statistical truth that the figures obtained for fifty are nearly the same as would be found from the entire twenty thousand, especially if the fifty were picked at random in a locality where the business formed a prominent industry. It might be said, however, that, in smaller cities and towns, wages generally were lower than in Boston. Allowing this, it is equally true that, generally, the outlay for rent, fuel and many articles of food, is less in such places than in a great city; and the relative proportion of expense to outlay is maintained even if the figures denoting earnings and expenses vary. As it is this proportion which shows the workingman's financial status, when it is discovered as regards a reasonable number, a dependence upon it as conclusive for the whole, cannot lead us far from the truth.

We have aimed to make our investigations of such a degree of comprehensiveness that our deductions would bear the impress of true representative character, and seem founded upon a tangible basis.

Our instructions to agents were general, and related only to places and occupations. Representative places were to be selected; that is, those in which considerable business was carried on, and wage-laborers congregated. They were expected to prosecute their researches in Boston, Lawrence, Fall River or Taunton, rather than in Hull, Nantucket, Mt. Washington or Pelham.

Again, as regarded occupations, those prominent in or peculiar to certain towns, were designated as proper for investigation, as being the ones in which wage-laborers could do as well as in any, and as being the ones, on the other hand, in which depression in business would be the most marked.

Mill operatives at the seats of textile manufacture; those engaged in building-trades in large or growing towns; leather-finishers and shoemakers, in those places devoted to the manufacture or utilization of leather; metal-workers in

the foundry districts; out-door laborers where public improvements were in progress, or the moving of merchandise carried on to a great extent; and, finally, shop-trades in those towns having prominent or peculiar industries.

Here premeditation ceased. Under such general instructions, with no purpose in view but the procurement of facts, with no theory to maintain or demolish, our agents prosecuted their investigations. The size of families; whether father alone worked, or was assisted by wife or children; nationality; whether saving money or in debt; manner of living as regarded food or dwelling, and such kindred points, were entirely unknown until the agent took down the facts. And the particulars obtained being complete, and of the same nature for each family, no throwing out of incomplete returns has been necessary.

Nearly one thousand workingmen were approached for the purpose of ascertaining their condition; but a large percentage, from want of accuracy in keeping their accounts, many from not keeping them at all, and some few (principally skilled workmen) who betrayed an indisposition to have their private life inquired into, or expressed an opinion founded on prejudice, that their statements would not be published if they were given,—all these combined to reduce our number of returns to three hundred and ninety-seven.

From research into investigations of a similar nature, and examination of the plans of procedure in them, we know of none in which so good a basis has been used as that upon which we have worked.

A more particular description of the system's working, in individual cases, forms the opening of Chapter III., and shows plainly the superiority of personal investigation, in accuracy and uniformity of information secured, over the voluntary reply circular system (which we deem practically worthless), or the oftentimes exceptional statements of individuals desirous either of showing their forchandedness or exciting commiseration.

With these preliminary observations, we present hereafter a series of tabulations, founded upon our returns, which, to our idea, show an extent of territory covered, and of occupations comprehended, sufficient to warrant the decided expres-

sion that they are indicative of the condition of wage-laborers in all parts of the state.

PLACES.

TABLE I.—*Giving Names and Population of Places visited, and showing number of families whose condition was investigated, number of persons in them, and average of persons to each.*

PLACES VISITED. [Cities denoted by Small Capitals.]	Population in 1870. (U. S. Census.)	Number of Fam- ilies visited.	Number of Per- sons in Fam- ilies.	Average of Per- sons in each Family.
Amesbury,	5,581	8	48	6.
Athol,	3,517	8	38	4.75
Attleborough,	6,769	8	42	5.25
Blackstone,	5,421	10	49	4.9
BOSTON, ¹	292,499	27	129	4.78
Brockton, ²	8,007	8	40	5.
Clinton,	5,429	8	44	5.5
FALL RIVER,	26,766	16	89	5.56
FITCHBURG,	11,260	16	84	5.25
GLOUCESTER,	15,389	10	52	5.2
HAVERHILL,	12,092	10	58	5.8
HOLYOKE,	10,733	13	62	4.77
LAWRENCE,	28,921	15	85	5.67
LOWELL,	40,928	17	88	5.18
LYNN,	28,233	14	70	5.
Marblehead,	7,703	8	41	5.13
Milford,	9,890	12	57	4.75
Natick,	6,404	12	58	4.83
NEW BEDFORD,	21,320	12	63	5.25
NEWBURYPORT,	12,595	10	50	5.
North Adams, ³	12,090	12	61	5.08
Pittsfield,	11,112	10	50	5.
Quincy,	7,442	6	30	5.
SALEM,	24,117	8	42	5.25
Shelburne Falls, ⁴	1,582	6	29	4.83
Southbridge,	5,208	10	50	5.
SPRINGFIELD,	26,703	16	82	5.13
TAUNTON,	18,629	12	58	4.83
Turner's Falls, ⁵	2,224	8	40	5.
Waltham,	9,065	10	49	4.9
Watertown,	4,326	10	51	5.1
Webster,	4,763	10	52	5.2
Westfield,	6,519	8	41	5.13
Weymouth,	9,010	8	40	5.
Woburn,	8,560	5	25	5.
WORCESTER,	41,105	16	94	5.88
15 cities, } 21 towns, } Total, 36, . . .	751,912	397	2,041	5.14

¹ Including Charlestown, West Roxbury and Brighton, annexed in 1873.

² Formerly North Bridgewater.

³ Part of Adams.

⁴ Part of Shelburne.

⁵ Part of Montague.

From this table it will be seen, that although the places visited (36) form a comparatively small part of the whole number in the state (340), yet their population aggregates 51.6 per cent. of the entire population of the state, which, in 1870, was 1,457,351. Thus it is clearly evident that our investigations were prosecuted in the most thickly-settled portions of the Commonwealth and, consequently, where wage-laborers were most numerous.

A closer inspection of the table will show that the average number of persons to the family was greatest in the city of Worcester (5.88), the city of Lawrence coming next (5.67), while Athol and Milford, both towns, had the fewest to the family (4.75).

The average in cities, as a class, was 5.23, and in towns, as such, 5.06.

The general average of all the families is 5.14, which demonstrates that the size of the workingman's family is much larger than the United States census of 1870 established as an average for all the families in the state.

As stated in the introduction, in the recapitulation of averages presented in Chapters IV. to IX., such averages are given subject to the influence of place of residence. As the enumeration of each individual place in each average-table would have occupied much room, and have necessitated twelve times the calculations which we have performed, we have deemed it sufficient to group the thirty-six places in three classes, based on population. In each of those towns which have less than 8,000 population, the relation of expenses to earnings would be about the same, and this remark, with equal truth, will apply to those small cities and large towns having a population of 8,000 to 16,000. It will also approximate very nearly to the truth in the case of large cities, numbering from 16,000 to 42,000 inhabitants. As will be seen in the following table, we have included Boston in this third class of the grouping.

TABLE II.—*Grouping of Places visited, according to Population.*

[Cities denoted by Small Capitals.]

POPULATION UNDER 8,000.	POPULATION 8,000 TO 16,000.	POPULATION ABOVE 16,000.
Amesbury. Athol. Attleborough. Blackstone. Clinton. Marblehead. Natick. Quincy. Shelburne Falls. ¹ Southbridge. Turner's Falls. ¹ Watertown. Webster. Westfield.	Brockton. ¹ FITCHBURG. GLOUCESTER. HAVERHILL. HOLYOKE. Milford. NEWBURYPORT. North Adams. ¹ Pittsfield. Waltham. Weymouth. Woburn.	BOSTON. ¹ FALL RIVER. LAWRENCE. LOWELL. LYNN. NEW BEDFORD. SALEM. SPRINGFIELD. TAUNTON. WORCESTER.

¹ See notes on page 203.

The subjoined table shows the number of families in each class of the grouping, the whole number of persons in them, and the average number of persons to each family. It will be seen that in the large cities the family's size is greatest, being in excess of the general average of 5.14, while in the other classes the particular average is less than the general.

The size of family averages is important to be borne in mind, for in the averages in succeeding chapters, given as regards places, for earnings and for cost of living expenses, the size of the family should manifestly be considered in conjunction with them.

TABLE III.—*Average size of Families, based upon the grouping of places, as shown in Table II.*

GRADES OF POPULATION.	Number of Families.	Number in Families.	Persons to each Family.
Under 8,000,	120	613	5.11
8,000 to 16,000,	124	628	5.06
Above 16,000, ¹	153	800	5.23
Total,	397	2,041	5.14

¹ Including Boston.

OCCUPATIONS.

We next present a table showing the occupations of the heads of families in the places visited, giving the number in each occupation in each place.

The building trades and out-door labor were particularly investigated in Boston. The boot, shoe and leather interest was specially examined into in Brockton, Haverhill, Lynn, Marblehead, Milford, Natick, and Woburn. The most particular attention, in Fitchburg, Shelburne and Turner's Falls (cutlery trade), Springfield, Taunton, Waltham, Weymouth, and Worcester, was given to the metal-workers. Our mill-operative returns were from Athol, Blackstone, Clinton, Fall River, Holyoke, Lawrence, Lowell, New Bedford, Salem, and Webster. The fishermen of Gloucester, carriage-makers of Amesbury, jewellers of Attleborough, stone-cutters of Quincy, and the cigar and whip makers of Westfield, are well represented. A careful examination of the table will confirm our assertion that representative and important employments are comprehended, in which wago-laborers can do as well as in any, and in which depression in business would be most marked.

TABLE IV.—*Showing Places visited, and Number in each Employment in each Place.*

[Cities denoted by Small Capitals; towns by Italics.]

PLACES, AND OCCUPATIONS THEREIN.	No. of Families visited.	PLACES, AND OCCUPATIONS THEREIN.	No. of Families visited.
<i>Amesbury.</i>		Laborer in mill,	1
Carriage painter,	1	“ in blanket mill,	1
“ smith,	1	“ out-door,	2
“ trimmer,	1		
Laborer in carriage shop,	1	<i>Attleborough.</i>	
“ in mill,	1	Carpenter,	2
“ out-door,	2	Jeweller,	2
Spinner,	1	Laborer in shop,	1
		“ in mill,	2
<i>Athol.</i>		“ out-door,	1
Carpenter,	1		
Furniture maker,	1	<i>Blackstone.</i>	
Machinist,	1	Carpenter,	1
Mill-hand,	1	Machinist,	2

TABLE IV.—*Showing Places visited, &c.*—Continued.

PLACES, AND OCCUPATIONS THEREIN.	No. of Families visited.	PLACES, AND OCCUPATIONS THEREIN.	No. of Families visited.
<i>Blackstone—Con.</i>		GLOUCESTER.	
Section-hand in mill,	1	Carpenter,	1
Spinner,	1	Fisherman,	4
Laborer in mill,	4	Laborer on wharf,	1
“ out-door,	1	“ out-door,	2
		Shoreman,	2
BOSTON.		HAVERHILL.	
Bricklayer,	2	Laborer out-door,	4
Cabinet-maker,	1	Shoemaker,	6
Carpenter,	2		
Laborer in machine shop,	3	HOLYOKE.	
“ for builders,	4	Carpenter,	1
“ on streets,	3	Dresser in mill,	1
“ on wharf,	3	Laborer in mill,	3
Machinist,	2	“ out-door,	3
Mason,	2	Machinist,	3
Painter,	1	Overseer in mill,	1
Plasterer,	2	Section-hand in mill,	1
Teamster,	2		
<i>Brockton.</i>		LAWRENCE.	
Laborer in shop,	1	Dresser in mill,	1
“ out-door,	2	Hatter,	2
Shoemaker,	5	Laborer in mill,	2
		“ out-door,	4
<i>Clinton.</i>		Machinist,	1
Carpenter,	1	Overseer in mill,	1
Laborer in mill,	1	Section-hand in mill,	1
“ out-door,	3	Spinner,	1
Machinist,	1	Weaver,	2
Section-hand in mill,	1		
Spare-hand “	1		
FALL RIVER.		LOWELL.	
Carpenter,	2	Carpenter,	3
Laborer in mill,	4	Laborer in mill,	2
“ out-door,	2	“ out-door,	3
Machinist,	2	Machinist,	3
Slasher,	1	Overseer in mill,	1
Spinner,	2	Section-hand in mill,	2
Weaver,	3	Spinner,	3
FITCHBURG.		LYNN.	
Blacksmith,	1	Carpenter,	1
Carpenter,	3	Laborer out-door,	4
Laborer in machine shop,	2	Morocco dresser,	2
“ in shop,	1	Painter,	1
“ out-door,	4	Shoe-channeller,	1
Machinist,	4	“ cutter,	1
Teamster,	1	“ laster,	2

TABLE IV.—*Showing Places visited, &c.*—Continued.

PLACES, AND OCCUPATIONS THEREIN.	No. of Families visited.	PLACES, AND OCCUPATIONS THEREIN.	No. of Families visited.
LYNN—Con.		North Adams—Con.	
Shoe trimmer,	1	Machinist,	1
Teamster,	1	Mechanic,	1
Marblehead.		Section-hand in mill,	2
Laborer out-door,	3	Shoemaker,	2
Shoe-cutter,	1	Pittsfield.	
“ laster,	1	Carpenter,	2
“ maker,	1	Laborer in mill,	2
“ trimmer,	2	“ out-door,	3
Milford.		Machinist,	1
Boot-maker,	3	Weaver,	2
Carpenter,	2	Quincy.	
Laborer in shop,	2	Laborer out-door,	1
“ out-door,	3	Quarryman,	2
Mechanic,	2	Stone-cutter,	3
Natick.		SALEM.	
Carpenter,	2	Carpenter,	2
Hatter,	1	Laborer in mill,	1
Laborer in shop,	2	“ out-door,	2
“ out-door,	3	Machinist,	1
Shoemaker,	4	Section-hand in mill,	1
NEW BEDFORD.		Teamster,	1
Carpenter,	2	Shelburne Falls (part of Shelburne).	
Laborer in mill,	1	Cutler,	2
“ out-door,	3	Laborer in cutlery works,	2
“ on wharf,	1	“ out-door,	1
Machinist,	2	Mechanic,	1
Overseer in mill,	1	Southbridge.	
Weaver,	2	Carpenter,	2
NEWEURYPORT.		Laborer in mill,	3
Carpenter,	1	“ out-door,	2
Laborer in mill,	1	Machinist,	2
“ in ship-yard,	1	Mill-hand,	1
“ out-door,	2	SPRINGFIELD.	
Machinist,	1	Blacksmith,	1
Section-hand,	1	Carpenter,	2
Ship-carpenter,	1	Laborer in machine shop,	3
Shoemaker,	1	“ out-door,	4
Weaver,	1	Machinist,	4
North Adams (part of Adams).		Mason,	1
Carpenter,	1	Teamster,	1
Laborer in mill,	2		
“ in print-works,	1		
“ out-door,	2		

TABLE IV.—*Showing Places visited, &c.—Concluded.*

PLACES, AND OCCUPATIONS THEREIN.	No. of Fam- ilies visited.	PLACES, AND OCCUPATIONS THEREIN.	No. of Fam- ilies visited.
TAUNTON.		<i>Webster.</i>	
Boiler-maker,	1	Carpenter,	2
Carpenter,	2	Laborer in mill,	4
Iron-roller,	1	" out-door,	1
Laborer in machine shop,	1	Machinist,	2
" in rolling-mill,	1	Section-hand in mill,	1
" out-door,	2		
Machinist,	2	<i>Westfield.</i>	
Moulder, iron,	1	Cigar-maker,	3
Nail-maker,	1	Laborer in whip factory,	1
		" out-door,	1
<i>Turner's Falls (part of Montague).</i>		Whip-maker,	3
Carpenter,	1	<i>Weymouth.</i>	
Cutler,	2	Iron-roller,	1
Laborer in paper-mill,	1	Iron-worker,	1
" in cutlery works,	1	Laborer in iron-works,	2
" out-door,	2	" out-door,	1
Machinist,	1	Shoemaker,	3
<i>Waltham.</i>		<i>Woburn.</i>	
Carpenter,	2	Carpenter,	1
Machinist,	1	Currier,	1
Mechanic,	1	Laborer in shop,	1
Laborer in mill,	3	" out-door,	1
" out-door,	2	Tanner,	1
Watchmaker,	1		
<i>Watertown.</i>		WORCESTER.	
Carpenter,	2	Boot-maker,	1
Laborer in mill,	2	Carpenter,	1
" out-door,	2	Engine builder,	1
Machinist,	1	Iron-moulder,	2
Mason,	1	Iron-roller,	2
Mechanic,	2	Laborer in iron works,	2
		" out-door,	3
		Machinist,	3
		Stair-builder,	1

With the desire in the case of occupations, as in that of places, to retain their full influence and yet avoid too extensive computations, we have arranged the sixty-four different forms of employment comprehended, under ten distinctive and explicit heads, and the averages given in succeeding chapters, as regards occupations, will refer to the classifications mentioned above.

That these occupations are comprehensive and representative, the following figures demonstrate.

The actual wage-laborers, in the state number 394,606. The sixty-four branches of occupation into which our investigations have extended, comprise, in the whole state, 256,730 persons, or 65 + per cent. of all the actual wage-laborers in the Commonwealth. No serious doubts as to the reliability of the averages, which we hereafter present, can be entertained, it would seem to us, when it is considered upon how comprehensive survey they are founded.

It will be noticed, also, in Table V., that each class of employments is designated (wholly or in parts) as *skilled* or *unskilled*; *overseers*, included under mill operatives, being put by themselves in order that their figures might not unduly influence the averages of either skilled or unskilled mill-labor.

This subdivision, according to kind of labor performed, was made in order that distinct systems of averages might be drawn from the two classes and their relative condition shown.

TABLE V.—*Classification of Occupations, with sub-divisions into Skilled and Unskilled Labor, and a complete presentation of the average family size therein.*

CLASSIFICATION OF OCCUPATIONS.	Number of Families.	Number in Families.	Avg. No. in each Family.
BUILDING TRADES.			
<i>Skilled.</i>			
Bricklayer,	2	11	5.5
Carpenter,	45	197	4.38
Mason,	4	19	4.75
Painter,	2	7	3.5
Plasterer,	2	11	5.5
Ship carpenter,	1	4	4.
Stair-builder,	1	5	5.
Totals,	57	254	4.46
BOOTS, SHOES AND LEATHER.			
<i>Skilled.</i>			
Boot-maker,	4	17	4.25
Currier,	1	4	4.
Morocco-dresser,	2	13	6.5
Shoe-channeller,	1	4	4.
Shoe-cutter,	2	10	5.
Shoe-laster,	3	15	5.

TABLE V.—*Classification of Occupations—Continued.*

CLASSIFICATION OF OCCUPATIONS.	Number of Families.	Number in Families.	Avg. No. in each Family.
BOOTS, SHOES, &C.—Con.			
Shoe-trimmer,	3	12	4.
Shoemaker,	22	106	4.82
Tanner,	1	5	5.
Totals,	39	186	4.77
METAL WORKERS.			
<i>Skilled.</i>			
Blacksmith,	2	9	4.5
Boiler-maker,	1	3	3.
Cutler,	4	19	4.75
Engine-builder,	1	5	5.
Iron-moulder,	3	15	5.
Iron-roller,	4	20	5.
Iron-worker,	1	4	4.
Jeweller,	2	9	4.5
Machinist,	41	183	4.46
Nail-maker,	1	6	6.
Watchmaker,	1	4	4.
Totals,	61	277	4.54
<i>Unskilled.</i>			
Laborer in cutlery works,	3	15	5.
in iron works,	4	25	6.25
in machine shop,	9	48	5.33
in rolling mill,	1	7	7.
Totals,	17	95	5.59
MILL OPERATIVES.			
<i>Skilled.</i>			
Dresser in mill,	2	10	5.
Mill hand,	2	11	5.5
Section hand in mill,	11	50	4.55
Spinner,	8	39	4.88
Spare hand in mill,	1	5	5.
Slasher,	1	6	6.
Weaver,	10	53	5.3
Totals,	35	174	4.97
<i>Unskilled.</i>			
Laborer in mill,	40	234	5.85
in paper mill,	1	7	7.
in print works,	1	6	6.
Totals,	42	247	5.88
<i>Overseers.</i>			
Overseer,	4	21	5.25
Totals,	4	21	5.25

TABLE V.—*Classification of Occupations—Concluded.*

CLASSIFICATION OF OCCUPATIONS.	Number of Families.	Number in Families.	Avg. No. in each Family.
OUT-DOOR EMPLOYMENTS.			
<i>Unskilled.</i>			
Fisherman,	4	20	5.
Laborer for builders,	4	21	5.25
out-door,	81	469	5.79
in shipyard,	1	7	7.
on streets,	3	16	5.33
on wharf,	5	26	5.2
Quarryman,	2	11	5.5
Shoreman (fisherman),	2	12	6.
Teamster,	6	29	4.83
Totals,	108	611	5.66
SHOP TRADES.			
<i>Skilled.</i>			
Cabinet-maker,	1	4	4.
Carriage-painter,	1	4	4.
" smith,	1	7	7.
" trimmer,	1	6	6.
Cigar-maker,	3	15	5.
Furniture-maker,	1	4	4.
Hatter,	3	15	5.
Mechanic,	7	34	4.86
Stone-cutter,	3	14	4.67
Whip-maker,	3	14	4.67
Totals,	24	117	4.88
<i>Unskilled.</i>			
Laborer in carriage shop,	1	7	7.
in shop,	8	45	5.63
in whip factory,	1	7	7.
Totals,	10	59	5.9

For convenience of reference, we present the occupation family averages, derived from Table V., in the succeeding tabular form. From it can be ascertained the average family size for each consolidated branch, and this figure must, as in the case of "places," be borne in mind, as of great value in the consideration of averages presented hereafter, of earnings, and of the cost of living in its aggregate or details.

TABLE VI.—*Showing Occupation Heads, Kind of Labor, and the Average Size of Family.*

CLASSIFICATION OF OCCUPATIONS.	Kind of Labor.	Persons to each Family.
Building trades,	Skilled,	4.46
Boots, shoes and leather,	"	4.77
Metal workers,	"	4.54
" "	Unskilled,	5.59
Mill operatives,	Skilled,	4.97
" "	Unskilled,	5.88
" "	Overseers,	5.25
Out-door employments,	Unskilled,	5.66
Shop trades,	Skilled,	4.88
" "	Unskilled,	5.90

This table establishes the fact that in every case (omitting "overseers," which class comprises but four families) the unskilled wage-laborer has a larger family to support than his skilled colaborer. It will also be noticed, with the above-mentioned exception, that the unskilled workman's average family size is always in excess of the general average (5.14),—often largely so,—and that as regards skilled laborers, it is as generally below it.

To present still more plainly the relative average family size of skilled and unskilled laborers, we subjoin the following aggregated table:—

TABLE VII.—*Showing the Relative Average Family Size of Skilled and Unskilled Laborers.*

CLASSIFICATION.	Number of Families.	Number in Families.	Average in each Family.
Skilled,	216	1,008	4.67
Unskilled,	177	1,012	5.72
Overseers,	4	21	5.25
Totals,	397	2,041	5.14

This presentation explains the large size of workingmen's families as compared with the average for all classes, for while the skilled laborer's family is about the same as the

general average of all in the state, the unskilled laborer's has *one more member*, and his superabundance materially raises the average for wage-laborers, as compared with the community in general.

The next table shows the relative representation of skilled and unskilled, under the ten occupation heads, and will be found of value in conjunction with the preceding tables relating to occupations. It being impossible to accurately classify the out-door laborers under distinct occupations (they move easily from one branch of unskilled employment to another), they are all included in "Out-Door Employments," and thus show, comparatively, a large representation; but the ratio of skilled and unskilled will lead to no distorting of averages, as they will not be combined, but, instead, be presented individually.

TABLE VIII.—*Showing Occupation Heads, and their subdivision into Skilled and Unskilled Labor, as regards persons employed therein.*

CLASSIFICATION OF OCCUPATIONS.	Skilled.	Unskilled.	Overseers.	Totals.
Building trades,	57	—	—	57
Boots, shoes and leather,	39	—	—	39
Metal-workers,	61	17	—	78
Mill-operatives,	35	42	4	81
Out-door employments,	—	108	—	108
Shop trades,	24	10	—	34
Totals,	216	177	4	397

NATIONALITIES.

We pass now to the representation of the nationalities of the heads of the families into whose condition investigation was made. The averages of family size, presented in Table IX., are of value, as in the cases of "places" and "occupations," for the full comprehension of the averages given in Chapters IV. to IX. of this part, and which relate to earnings, and cost of living, whether considered in the aggregate, or with reference to its component items of expenditure.

TABLE IX.—*Showing Nationalities, Number of Families, and the Average Family Size to each.*

NATIONALITY OF HEAD OF FAMILY.	Number of Families.	Number in Families.	Average to each Family.
American,	125	541	4.33
English,	80	399	4.99
French,	2	14	7.
French Canadian,	29	162	5.59
German,	26	143	5.50
Irish,	133	772	5.80
Scotch,	2	10	5.
Totals,	397	2,041	5.14

This table shows several important points. One is, that the Irish surpass all other nationalities in fecundity; another is, that the Americans fall below all others in their average family size. The small number of French and Scotch families renders their average useless for comparison. It will be seen that the German and French Canadian average approximates very nearly, while the English occupy an intermediate position between the highest and lowest averages.

The distribution of the sixty-four occupations among the different nationalities, is easily discernible by an inspection of the following table:—

TABLE X.—*Showing Nationality of Head of Family, and Occupation.*

OCCUPATION OF HEAD OF FAMILY.	Whole Number.	American.	English.	French.	French Canadian.	German.	Irish.	Scotch.
Blacksmith,	2	1	1	—	—	—	—	—
Boiler-maker,	1	1	—	—	—	—	—	—
Boot-maker,	4	1	1	—	1	—	1	—
Bricklayer,	2	—	—	—	—	1	1	—
Cabinet-maker,	1	1	—	—	—	—	—	—
Carpenter,	45	35	7	—	2	1	—	—
Carriage painter,	1	1	—	—	—	—	—	—
“ smith,	1	1	—	—	—	—	—	—
“ trimmer,	1	1	—	—	—	—	—	—
Cigar maker,	3	1	1	—	—	—	1	—
Currier,	1	1	—	—	—	—	—	—
Cutler,	4	—	2	—	—	2	—	—
Dresser in mill,	2	—	2	—	—	—	—	—

TABLE X.—*Showing Nationality, &c.*—Concluded.

OCCUPATION OF HEAD OF FAMILY.	Whole Number.	American.	English.	French.	French Canadian.	German.	Irish.	Scotch.
Engine builder,	1	—	1	—	—	—	—	—
Fisherman,	4	3	—	—	—	—	1	—
Furniture maker,	1	1	—	—	—	—	—	—
Hatter,	3	—	—	—	—	—	3	—
Iron moulder,	3	2	—	—	—	—	1	—
“ roller,	4	1	2	—	—	—	1	—
“ worker,	1	1	—	—	—	—	—	—
Jeweller,	2	2	—	—	—	—	—	—
Laborer for builders,	4	—	—	—	1	2	1	—
“ in carriage shop,	1	—	—	—	—	—	1	—
“ in cutlery works,	3	—	—	—	—	2	1	—
“ in iron works,	4	—	1	—	1	—	2	—
“ in machine shop,	9	—	2	—	1	2	4	—
“ in mill,	40	—	7	—	10	4	19	—
“ out-door,	81	—	6	—	12	6	57	—
“ in paper-mill,	1	—	—	—	—	—	1	—
“ in print-works,	1	—	—	—	—	—	1	—
“ in rolling-mill,	1	—	—	—	—	—	1	—
“ in shipyard,	1	—	—	—	—	—	1	—
“ in shop,	8	—	2	—	—	1	5	—
“ on streets,	3	—	—	—	—	—	3	—
“ on wharf,	5	—	—	—	1	—	4	—
“ in whip factory,	1	—	—	—	—	—	1	—
Machinist,	41	29	9	—	—	1	1	1
Mason,	4	1	2	—	—	—	1	—
Mechanic,	7	4	2	—	—	—	1	—
Mill-hand,	2	—	1	—	—	—	1	—
Morocco-dresser,	2	—	1	—	—	—	1	—
Nail-maker,	1	1	—	—	—	—	—	—
Overseer in mill,	4	4	—	—	—	—	—	—
Painter,	2	2	—	—	—	—	—	—
Plasterer,	2	—	1	—	—	—	1	—
Quarryman,	2	—	—	—	—	—	2	—
Section-hand in mill,	11	2	8	—	—	1	—	—
Ship carpenter,	1	1	—	—	—	—	—	—
Shoe channeller,	1	1	—	—	—	—	—	—
“ cutter,	2	1	—	—	—	—	1	—
“ laster,	3	1	—	—	—	—	2	—
“ trimmer,	3	3	—	—	—	—	—	—
Shoemaker,	22	14	4	2	—	—	2	—
Shoreman (fisherman),	2	1	—	—	—	—	1	—
Slasher in mill,	1	—	—	—	—	—	—	1
Spare hand in mill,	1	—	—	—	—	1	—	—
Spinner,	8	—	5	—	—	—	3	—
Stair-builder,	1	1	—	—	—	—	—	—
Stone-cutter,	3	1	1	—	—	—	1	—
Tanner,	1	—	—	—	—	—	1	—
Teamster,	6	1	3	—	—	—	2	—
Watchmaker,	1	1	—	—	—	—	—	—
Weaver,	10	—	8	—	—	2	—	—
Whip-maker,	3	2	—	—	—	—	1	—

Consolidating the nationalities under the ten heads of occupation, as classified in Table V., we obtain for a result the figures shown in Table XI.

TABLE XI.—*Showing Nationalities, and their Representation in the Classified Occupations.*

NATIONALITIES.	Building Trades.	Boots, Shoes and Leather.	Metal Workers.	Mill - Operatives.	Out-door Employments.	Shop Trades.	Totals.
American,	40	22	39	6	5	13	125
English,	10	6	18	31	9	6	80
French,	—	2	—	—	—	—	2
French Canadian,	2	1	2	10	14	—	29
German,	2	—	7	8	8	1	26
Irish,	8	8	11	25	72	14	133
Scotch,	—	—	1	1	—	—	2
Total,	57	39	78	81	108	94	397

From the above we find that Americans are principally employed in the building-trades, in leather preparation and boot and shoe manufacture, and as metal-workers. The English are chiefly engaged as mill-operatives. The Irish are numerous in mill-labor, and almost monopolize the out-door branches of employment. The other nationalities are quite evenly distributed through the various branches.

An aggregation into skilled and unskilled, makes a final presentment as regards nationalities.

TABLE XII.—*Showing Nationalities, and the Number of each engaged in Skilled or Unskilled Labor.*

NATIONALITIES.	Skilled.	Unskilled.	Overseers.	Totals.
American,	116	5	4	125
English,	59	21	—	80
French,	2	—	—	2
French Canadian,	3	26	—	29
German,	9	17	—	26
Irish,	25	108	—	133
Scotch,	2	—	—	2
Totals,	216	177	4	397

The above indicates that the Americans and English have employed in branches of skilled work 85+ per cent of their whole number; while the French Canadians, Germans and Irish show 80+ per cent of their number engaged in unskilled labor. The other nationalities are too few in number to bear comparison.

To summarize briefly the points demonstrating the extent of our investigations and their representative value, we will state that—

- 1st. The places visited contain 51.6 per cent of the whole population of the state.
- 2d. The occupations comprehended by our inquiries employ 65+ per cent of all the actual wage-laborers in the state.
- 3d. Representatives of both skilled and unskilled labor are presented in nearly equal proportion.
- 4th. Nationalities, prominent in our laboring classes, are represented in a fair ratio to each other.

The averages and conclusions in Chapters IV. to X. inclusive, are drawn from the returns upon which the tables in this chapter are based. If these tables indicate a thorough and impartial survey of the condition of the families of wage-laborers in the Commonwealth, the results of our examination cannot be gainsaid, nor their logical strength disputed. That they are so indicative, we have plainly stated our firm belief.

CHAPTER III.

INDIVIDUAL PRESENTATION OF THE CONDITION OF FAMILIES.

With the desire to show the condition of each family as a unity, to furnish the means to those who may desire to deduce averages or points which we do not present, and, it may be, to enable others to verify our averages, we present individual statements, from the original returns, of the three hundred and ninety-seven families. The only liberty we have taken with our agents' transcripts from their note-books

has been to rewrite them in a uniform manner of presentation and to drop the designation of the individual residence. This last was done in deference to the wishes of many who furnished information, but who were desirous of avoiding local publicity. No mention of location being promised in these cases, it was necessary to omit it in all; the residence of every family presented is, however, upon the original return in this bureau, the office number upon it corresponding with the printed number at the head of each family statement.

In every case, in the following returns, the entire earnings and the entire expenses are given. This desirable uniformity has been secured, as has been said previously, by direct personal inquiry. The agent, upon arriving in a place selected for investigation, and, knowing its prominent or peculiar industries, visited the mill, workshop, wharf, public works or foundry, as the case might be. Accosting the first workman at hand, a statement of what was desired was made; in case of compliance, a time was fixed, convenient to the workman, at which to supply the desired figures and information; in case of inability or want of inclination, application was made to one and another of the workmen, and at other establishments, until the desired number was secured. Visits by day were made in order that the locality and the immediate surroundings of the houses could be examined, and visits in the evening were required, for then the workmen could refer to their account-books and bills, and find the items of expenditure of their cost of living. As a matter of fact, our returns would have been materially smaller in number, or wanting in completeness, but for these evening visits made after work was done. The rooms were inspected and their pleasant or unpleasant features noted. The children were at home, and the physical appearance and dress of the family were observed. It is worthy of mention, that but comparatively few families had, or had lately had, any cases of severe illness among its members.

In the following individual statements of families we give first the office number, the occupation of the workman and his nationality; then the earnings of all the members of the family who were at work, giving the ages of children and

young persons so employed ; next comes a description of the condition of the family, comprehending its size, whether both parents are living, number of children and their ages, denoting those at home, at school and at work ; the size of the tenement occupied, its interior furnishing and appearance and immediate exterior surroundings, with a statement of the character of the locality in which the house is situated, as regards appearance, cleanliness and necessary sanitary provisions ; an enumeration of the articles for the saving of labor or for adding to the enjoyments of the home. The dress of the family on work-days or Sundays, specifying those attending church. And, finally, such items of a personal nature as the parents chose to give, including the distance of the home from work, the amount of lost time and consequent falling off in earnings, the necessity of their children's labor in order to support the family, savings, debt, prospects, opinion of the bureau's work, and other information of a similar nature.

The kinds of food used at breakfast, dinner and supper are enumerated, oftentimes with remarks, based on examination, as to its quality or quantity.

The cost of living is shown in the aggregate, immediately followed by a detailed statement of the various expenditures which, combined, form the total outlay.

The general order of presentation of all the families is based upon Table V. in Chapter II., each subdivision of employment being denoted by head-lines, showing the occupation, whether skilled or unskilled, and the number of families included.

Skilled.	BUILDING TRADES.	57 Families.
No. 1.	BRICKLAYER.	German.

EARNINGS of father, \$810

CONDITION.—Family numbers 5, parents and 3 children from eight months to seven years of age; one goes to school. Occupy a tenement of 4 rooms, well located and with good surroundings. The house is well furnished and the parlor carpeted. Own a piano. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat and coffee.
Dinner. Meat or fish, potatoes, bread, pie.
Supper. Bread, butter, gingerbread, tea.

COST OF LIVING, \$810

Rent,	\$204 00	Fish,	\$9 60	Dry goods, . . .	\$24 00
Fuel,	40 60	Milk,	18 00	Papers,	8 00
Groceries, . . .	320 49	Boots and shoes, .	30 50	Societies, . . .	10 00
Meat,	81 23	Clothing,	42 00	Sundries, . . .	12 50

No. 2.	BRICKLAYER.	Irish.
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EARNINGS of father, \$760

CONDITION.—Family numbers 6, parents and 4 children from two to thirteen years of age; two go to school. Have a tenement of 4 rooms in a poor locality and with very little yard room. The house is moderately well furnished, but the rooms are inconveniently small. Family dresses moderately well.

FOOD.—*Breakfast.* Bread, butter, potatoes, salt pork and coffee.
Dinner. Bread, fish or meat, potatoes.
Supper. Bread, butter and tea.

COST OF LIVING, \$760

Rent,	\$156 00	Fish,	\$12 30	Dry goods, . . .	\$18 20
Fuel,	37 60	Milk,	15 90	Sundries, . . .	25 43
Groceries, . . .	364 21	Boots and shoes, .	22 50		
Meat,	63 82	Clothing,	44 00		

No. 3.	CARPENTER.	American.
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EARNINGS of father, \$686

CONDITION.—Family numbers 4, parents and 2 children, from one to five years of age; one goes to school. Live in a tenement of 5 rooms, pleasantly located and surrounded. The apartments are well furnished and carpeted. Have a sewing-machine. Family dresses well, and attends church.

FOOD.—*Breakfast.* Bread, butter, meat, eggs, cake and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables in season, pie and tea.
Supper. Bread, butter, cake, sauce and tea.

COST OF LIVING, \$686

Rent,	\$100 00	Fish,	\$8 00	Dry goods, . . .	\$24 00
Fuel,	43 80	Milk,	28 40	Papers,	9 00
Groceries, . . .	208 19	Boots and shoes, .	27 00	Religion, . . .	12 00
Meat,	101 14	Clothing,	34 00	Sundries, . . .	40 00

No. 4.	CARPENTER.		American.
EARNINGS of father,	.	.	\$748
CONDITION.—Family numbers 4, parents and 2 children from seven to eleven years of age; both children go to school. Occupy a tenement of 5 rooms, with pleasant surroundings, and having a small garden attached. The house is well furnished and the parlor carpeted. Have a sewing-machine. Family dresses well and attends church.			
FOOD.— <i>Breakfast.</i>	Bread, butter, eggs boiled or fried, cake, tea.		
<i>Dinner.</i>	Bread, butter, meat, potatoes, pickles, vegetables, pie, tea.		
<i>Supper.</i>	Bread, butter, sauce or cheese, cake and tea.		
COST OF LIVING,	.	.	\$748
Rent,	\$144 00	Fish, \$6 00	Dry goods, \$33 00
Fuel,	46 00	Milk, 14 22	Papers, 8 00
Groceries,	800 21	Boots and shoes, 19 00	Religion, 12 00
Meat,	93 67	Clothing, 40 00	Sundries, 23 90

No. 5.	CARPENTER.			American.	
EARNINGS of father, \$768					
CONDITION.—Family numbers 5, parents and 3 children from three to ten years of age; two go to school. Have a tenement of 5 rooms located in good neighborhood with pleasant surroundings. The rooms are well furnished and the parlor carpeted. Have a sewing-machine. The family dresses well.					
FOOD.— <i>Breakfast.</i> Hot biscuit, butter, meat or eggs, cake and tea.					
<i>Dinner.</i> Bread, butter, meat, potatoes, vegetables, pie.					
<i>Supper.</i> Bread, butter, sauce, cake and tea.					
COST OF LIVING, \$768					
Rent,	\$132 00	Fish,	\$10 00	Dry goods,	\$19 84
Fuel,	37 00	Milk,	17 00	Papers,	8 00
Groceries, . .	846 22	Boots and shoes, .	28 80	Religion,	10 00
Meat,	89 60	Clothing,	60 00	Sundries,	13 24

No. 6.	CARPENTER.			American.		
EARNINGS of father,			\$723			
CONDITION.—Family numbers 4, parents and 2 children from four to seven years of age; one goes to school. Live in a tenement of 5 rooms with pleasant and healthy surroundings. The apartments are well furnished and the parlor is carpeted. Family dresses well and is very comfortably situated for working people.						
FOOD.— <i>Breakfast.</i>			Bread, butter, eggs, cake and tea.			
<i>Dinner.</i>			Bread, butter, meat, potatoes, vegetables, pie and tea.			
<i>Supper.</i>			Bread, butter, fish or cheese, cake and tea.			
COST OF LIVING,			\$707			
Rent,	\$96 00	Fish,	\$12 00	Dry goods,	\$16 00	
Fuel,	49 00	Milk,	17 00	Papers,	6 00	
Groceries,	839 00	Boots and shoes,	18 00	Societies,	5 00	
Meat,	70 00	Clothing,	60 00	Sundries,	26 00	

No. 7.	CARPENTER.	American.
EARNINGS of father,		\$630
daughter, aged 16,		330
son, aged 14,		240
		— \$1,220

CONDITION.—Family numbers 6, parents and 4 children from eight to sixteen years. Occupy a tenement of 6 rooms very pleasantly situated, with good surroundings and ample yard room. The house is well furnished and every room except the kitchen is carpeted. Own a piano, sewing and other labor saving machines. Family dresses well, and attends church. Has had no sickness for several years, and has saved money.

FOOD.—Breakfast.	Bread and butter, brown bread, meat, eggs, pie or cake, tea, coffee.
Dinner.	Bread and butter, meat, potatoes, pickles, vegetables, fruit, pudding or pie, tea.
Supper.	Bread and butter, cold meat or fish, sauce, pie, cake and tea.

COST OF LIVING,				\$1,150	
Rent,	\$192 00	Fish,	\$10 20	Dry goods, . . .	\$49 75
Fuel,	71 00	Milk,	34 62	Religion, . . .	20 00
Groceries, . .	357 11	Boots and shoes,	48 80	Books and papers,	17 00
Meat,	121 19	Clothing, . . .	163 00	Sundries, . . .	65 33

No. 8.	CARPENTER.	American.
EARNINGS of father,		\$785
son, aged 16,		300
		— \$1,085

CONDITION.—Family numbers 5, parents and 3 children from eight to sixteen years of age; two go to school. Have a tenement of 6 rooms, situated in a pleasant neighborhood, with healthy surroundings. The rooms are well furnished and the parlor and bed-rooms carpeted. Have a piano and sewing-machine. Family dresses well and attends church.

FOOD.—Breakfast.	Bread, butter, steak, cake and coffee.
Dinner.	Brown bread, butter, meat, potatoes, pickles, vegetables, pudding or pie.
Supper.	Bread, butter, cheese or fish, sauce, cake and tea; baked beans Sunday morning.

COST OF LIVING,				\$977	
Rent,	\$150 00	Milk,	\$16 20	Religion, . . .	\$18 00
Fuel,	50 00	Boots and shoes,	36 00	New furniture, .	100 00
Groceries, . .	306 50	Clothing, . . .	103 00	Sundries, . . .	37 57
Meat,	96 90	Dry goods, . . .	36 00		
Fish,	14 83	Papers,	12 00		

No. 9.	CARPENTER.	American.
EARNINGS of father,		\$738

CONDITION.—Family numbers 4, parents and 2 children from four to seven years of age; one goes to school. Live in a tenement of 5 rooms, located in a good neighborhood, with clean and healthy surroundings. The apartments are furnished well, and there is a carpet on the parlor. Have a sewing-machine. Family dresses well.

FOOD.—Breakfast.	Hot biscuits, butter, meat or eggs, cake, tea.
Dinner.	Bread, butter, meat, potatoes, sometimes vegetables, pie or pudding, tea.
Supper.	Bread, butter, gingerbread, sauce, tea.

COST OF LIVING,				\$738
Rent, \$144 00	Fish, \$12 00	Dry goods, . . . \$24 00		
Fuel, 30 00	Milk, 12 63	Papers, 8 00		
Groceries, . . 312 87	Boots and shoes, . 23 37	Societies, . . . 6 00		
Meat, 82 36	Clothing, . . . 52 00	Sundries, . . . 21 80		

No. 10.	CARPENTER.	America.
EARNINGS of father,		\$718
son, aged 15,		330
		<hr/> \$1,048

CONDITION.—Family numbers 6, parents and 4 children from four to sixteen years of age; two go to school, including the eldest girl, who also helps the mother at home. Occupy a tenement of 6 rooms pleasantly situated, with agreeable surroundings and a small flower-garden attached. The house is well furnished and parlor carpeted. Own a piano and sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread and butter, meat or fish, cake, tea.
Dinner. Bread and butter, meat, potatoes, vegetables, pickles, pie or pudding.
Supper. Bread, butter, cold corned meat, doughnuts, or gingerbread, cheese and tea. Baked beans Sunday morning.

COST OF LIVING,				\$361
Rent, \$200 00	Fish, \$12 00	Dry goods,		\$30 00
Fuel, 50 75	Milk, 33 28	Papers,		8 00
Groceries, . . . 356 00	Boots and shoes, . 27 80	Religion,		12 00
Meat, 114 64	Clothing, 107 00	Sundries,		29 00

No. 11.	CARPENTER.	America.
EARNINGS of father,		\$620
son, aged 16,		300
		<hr/> \$920

CONDITION.—Family numbers 6, parents and 4 children from seven to sixteen years of age; three go to school. Have a tenement of 6 rooms, about three-quarters of a mile from the shop, in a good neighborhood and the surroundings clean, pleasant and healthy. The rooms are well furnished and carpeted. Have sewing and other labor saving machines. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake and tea.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding.
Supper. Bread, butter, sauce or canned-fruit, doughnuts and tea.

COST OF LIVING,				\$320
Rent, \$168 00	Fish, \$10 00	Dry goods,		\$31 00
Fuel, 52 00	Milk, 33 70	Papers,		10 00
Groceries, . . . 361 76	Boots and shoes, . 39 85	Religion,		16 00
Meat, 108 39	Clothing, 71 50	Sundries,		17 14

No. 12.	CARPENTER.	America.
EARNINGS of father,		\$722

CONDITION.—Family numbers 3, parents and one child fourteen years of age, who goes to school. Live in a tenement of 6 rooms, well located, with very pleasant and healthy surroundings. The apartments are well furnished and the parlor carpeted. Have a sewing and other labor saving machines. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, with the remains left from dinner, or eggs, cake, coffee.
Dinner. Bread, butter, meat, potatoes, pickles, vegetables, pie, tea.
Supper. Bread, butter, cake, cheese, sauce.

COST OF LIVING,				\$487 47
Rent, \$120 00	Fish, \$8 00	Dry goods,		\$19 00
Fuel, 46 00	Milk, 25 44	Papers,		9 00
Groceries, . . . 263 79	Boots and shoes, . 26 00	Sundries,		3 00
Meat, 69 24	Clothing, 67 00			

EARNINGS of father, \$690

CONDITION.—Family numbers 4, parents and 2 children from three to seven years of age; one goes to school. Occupy a tenement of 5 rooms with pleasant and healthy surroundings. The house is well furnished and the parlor carpeted. Own a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter and whatever is left from dinner, cake and coffee.

Dinner. Meat, potatoes, vegetables, bread, pie, tea.

Supper. Bread and butter, sauce, gingerbread and tea.

COST OF LIVING, \$690

Rent, \$144 00	Fish, \$7 00	Dry goods, . . . \$17 00
Fuel, 39 75	Milk, 14 30	Papers, 4 00
Groceries, . . . 270 30	Boots and shoes, . 27 00	Religion, 12 00
Meat, 74 80	Clothing, 56 50	Sundries, 13 55

EARNINGS of father, \$690

daughter, aged 16, 257

\$917

CONDITION.—Family numbers 5, parents and 3 children from nine to sixteen years of age. Have a tenement of 5 rooms, one mile from shop, in pleasant neighborhood with good surroundings. House well furnished and the rooms carpeted. Have a piano and sewing-machine. The family dresses well and attends church.

FOOD.—*Breakfast.* Hot biscuit, butter, eggs or ham, cake and tea.

Dinner. Meat, potatoes, vegetables, bread, pie and tea.

Supper. Bread, butter, sauce, cake and tea. Baked beans Sunday morning.

COST OF LIVING, \$842 04

Rent, \$126 00	Milk, \$21 69	Societies, \$8 00
Fuel, 50 00	Boots and shoes, . 32 00	Religion, 20 00
Groceries, . . . 319 67	Clothing, 71 50	Sundries, 22 60
Meat, 121 30	Dry goods, 27 00	
Fish, 10 80	Papers, 11 48	

EARNINGS of father, \$725

CONDITION.—Family numbers 4, parents and 2 children from two to seven years of age; one goes to school. Live in a tenement of 5 rooms in a good neighborhood, with neat, clean and healthy surroundings. The apartments are well furnished and the parlor carpeted. Own a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake and coffee.

Dinner. Bread, butter, meat, potatoes, vegetables, pie, tea.

Supper. Bread, butter, cake, sauce, tea.

COST OF LIVING, \$719 42

Rent, \$120 00	Milk, \$14 28	Societies, \$8 00
Fuel, 41 25	Boots and shoes, . 23 10	Religion, 12 00
Groceries, . . . 291 39	Clothing, 56 00	Sundries, 21 00
Meat, 81 40	Dry goods, 29 00	
Fish, 3 00	Papers, 14 00	

No. 16.	CARPENTER.	America.
EARNINGS of father,		\$305
daughter, aged 17,		320
		\$1,015

CONDITION.—Family numbers 5, parents and 3 children from seven to seventeen years of age; two go to school. Have a tenement of 5 rooms in good locality, with clean surroundings and a small flower-garden. The house is well furnished and the parlor and bed-rooms are carpeted. Have a sewing-machine. Family dresses well and attends church. Have money in the savings bank.

FOOD.— <i>Breakfast.</i>	Bread, graham bread, butter, meat or eggs, cake, tea and coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pickles, cheese, pudding or pie and tea.
<i>Supper.</i>	Bread, butter, sauce, fresh or preserved fruit, sometimes fish, cake or pie, and tea.

COST OF LIVING,	\$817
Rent,	\$150 00
Fuel,	61 75
Groceries,	312 42
Meat,	92 85
Fish,	\$15 00
Milk,	18 40
Boots and shoes,	37 95
Clothing,	84 00
Dry goods,	\$37 75
Religion,	18 00
Books and papers,	12 50
Sundries,	76 25

No. 17.	CARPENTER.	America.
EARNINGS of father,		\$720

CONDITION.—Family numbers 4, parents and 3 children of six and fourteen years of age; both go to school. Have a tenement of 4 rooms located in good neighborhood, with very pleasant surroundings and a small garden. The house is well furnished and the parlor carpeted. Have a sewing-machine and cottage-organ. Family dresses well and attends church.

FOOD.— <i>Breakfast.</i>	Brown bread, white bread, butter, meat or eggs, cake.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pickles, pie and tea.
<i>Supper.</i>	Bread, butter, sauce and tea.

COST OF LIVING,	\$720
Rent,	\$175 00
Fuel,	47 00
Groceries,	248 00
Meat,	70 21
Fish,	\$11 80
Milk,	22 40
Boots and shoes,	27 75
Clothing,	50 00
Dry goods,	\$17 00
Papers,	5 00
Religion,	12 00
Sundries,	21 24

No. 18.	CARPENTER.	America.
EARNINGS of father,		\$675

CONDITION.—Family numbers 3, parents and 1 child four years of age. Have a tenement of four rooms well located and with good surroundings. The rooms are well furnished and the parlor carpeted. Have a piano and a sewing-machine. Family dresses well and attends church.

FOOD.— <i>Breakfast.</i>	Bread, butter, cold meat, cake and tea.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pickles, pie and tea.
<i>Supper.</i>	Bread, butter, sauce, cake and tea. Baked beans Saturday night.

COST OF LIVING,	\$654
Rent,	\$120 00
Fuel,	39 00
Groceries,	253 89
Meat,	79 20
Fish,	6 00
Milk,	\$18 45
Boots and shoes,	14 00
Clothing,	44 00
Dry goods,	16 00
Papers,	8 00
Societies,	\$3 00
Religion,	10 00
Sundries,	37 45

No. 19.

CARPENTER.

American.

EARNINGS of father, \$716

CONDITION.—Family numbers 4, parents and 2 children from four to nine years of age; one goes to school. Live in a tenement of 6 rooms situated about three-quarters of a mile from shop, pleasantly located, with good surroundings. The apartments are furnished well and the rooms carpeted. Have a sewing-machine. Family dresses well and attends church. Buy all goods for cash, and keeps a record of all transactions.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake and coffee.

Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie, tea.

Supper. Bread, butter, cheese or sauce, cake and tea.

COST OF LIVING, \$683

Rent,	\$132 00	Milk,	\$14 26	Societies,	\$9 00
Fuel,	43 00	Boots and shoes,	23 00	Religion,	14 00
Groceries,	239 74	Clothing,	53 00	Sundries,	39 10
Meat,	76 50	Dry goods,	17 00		
Fish,	11 40	Papers,	12 00		

No. 20.

CARPENTER.

American.

EARNINGS of father, \$744

CONDITION.—Family numbers 3, parents and 1 child six years of age, who goes to school. Occupy a tenement of 5 rooms, with neat and healthy surroundings. House is well furnished; every room, except the kitchen, is carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, eggs or cheese, cake and coffee.

Dinner. Bread and butter, meat, potatoes, vegetables, pickles, pie and tea.

Supper. Bread and butter, sauce or canned-fruit, gingerbread and tea.

COST OF LIVING, \$720 31

Rent,	\$144 00	Fish,	\$8 00	Dry goods,	\$20 00
Fuel,	40 00	Milk,	16 30	Books and papers,	12 00
Groceries,	299 06	Boots and shoes,	18 00	Religion,	16 00
Meat,	90 45	Clothing,	54 00	Sundries,	32 50

No. 21.

CARPENTER.

American.

EARNINGS of father, \$636

CONDITION.—Family numbers 2, parents and 1 child four years of age. Occupy a tenement of 5 rooms, situated a mile from the shop, in a good neighborhood with pleasant and healthy surroundings and a small flower-garden attached. The house is well furnished and rooms carpeted. Have a sewing-machine and piano. Family dresses well.

FOOD.—*Breakfast.* Meat or eggs, hot biscuit, butter, cake and coffee.

Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie and tea.

Supper. Bread, butter, cheese or sauce, cake, tea.

COST OF LIVING, \$679 53

Rent,	\$100 00	Fish,	\$8 00	Dry goods,	\$16 50
Fuel,	39 00	Milk,	15 60	Papers,	6 00
Groceries,	319 64	Boots and shoes,	19 00	Societies,	8 00
Meat,	82 29	Clothing,	53 00	Sundries,	12 50

No. 22.	CARPENTER.	American.			
EARNINGS of father,		\$798			
CONDITION.—Family numbers 4, parents and 2 children from eight to eleven years of age. Live in a tenement of 5 rooms, in a respectable neighborhood with good surroundings. The apartments are remarkably neat and clean, well furnished, with parlor carpeted. Family dresses well and attends church.					
FOOD.— <i>Breakfast.</i> Bread, butter, sometimes fresh meat, potatoes, cake and tea.					
<i>Dinner.</i> Graham bread, butter, meat, potatoes, vegetables, pickles, pie or pudding and tea.					
<i>Supper.</i> Bread, butter, gingerbread, cheese, sauce, tea.					
COST OF LIVING,		\$775			
Rent,	\$144 00	Fish,	\$12 00	Dry goods,	\$23 00
Fuel,	38 50	Milk,	13 00	Papers,	9 00
Groceries,	241 80	Boots and shoes,	18 75	Religion,	14 00
Meat,	100 67	Clothing,	92 00	Sundries,	42 20

No. 23.	CARPENTER.		American.		
EARNINGS of father,	.	.	\$778 25		
CONDITION.—Family numbers 4, parents and 2 children of three and six years of age; one goes to school. Occupy a tenement of 5 rooms in a good locality with pleasant surroundings. The house is well furnished and the rooms are carpeted. Family dresses well and attends church.					
FOOD.— <i>Breakfast.</i> Bread and butter, fresh meat, or what was left from dinner, cake and coffee.					
<i>Dinner.</i> Bread and butter, meat, potatoes, vegetables, pickles and pie.					
<i>Supper.</i> Bread, butter, sauce or cheese, cake and tea.					
COST OF LIVING,			\$804 25		
Rent,	\$144 00	Fish,	\$8 00	Dry goods,	\$22 75
Fuel,	61 75	Milk,	12 80	Religion,	16 00
Groceries,	126 80	Boots and shoes,	19 50	Papers,	5 00
Meat,	70 40	Clothing,	72 00	Sundries,	75 16

No. 24.	CARPENTER.	American.
EARNINGS of father,		\$746
CONDITION.—Family numbers 4, parents and 2 children of three and eight years of age; one goes to school. Occupy a tenement of 5 rooms in a pleasant neighborhood with good surroundings. House is well furnished, with every room, except the kitchen, carpeted. Have a sewing-machine. Family dresses well.		
FOOD.— <i>Breakfast.</i> Bread, butter, cold meat, warmed potatoes, gingerbread and coffee.		
<i>Dinner.</i> Bread, butter, meat, potatoes, vegetables, pie.		
<i>Supper.</i> Bread and butter, fish or cheese and tea. Baked beans Saturday night and Sunday morning.		
COST OF LIVING,		\$701 30
Rent,	\$144 00	Milk, \$15 40
Fuel,	58 40	Societies, \$8 00
Groceries,	239 73	Boots and shoes, 23 80
Meat,	78 50	Religion, 14 00
Fish,	6 75	Clothing, 63 00
		Sundries, 33 00
		Dry goods, 19 00
		Papers, 9 00

No. 25.

CARPENTER.

American.

EARNINGS of father, \$740 75

CONDITION.—Family numbers 3, parents and 1 child who goes to school. Live in a tenement of 5 rooms, well located in a healthy neighborhood with good surroundings. The apartments are carpeted and comfortably furnished. Family dresses well and attends church. They find it impossible to save money and live in comfort.

FOOD.—*Breakfast.* Hot biscuits, graham bread, butter, meat or eggs, cake, pie and tea.
Dinner. Bread, butter, meat, potatoes, vegetables, sometimes fish, pickles, pie or pudding, fruit in season, tea.
Supper. Bread, butter, sauce or canned-fruit, cheese and tea. Have baked beans once per week.

COST OF LIVING, \$740 75

Rent, \$144 00	Milk, \$17 60	Religion, \$12 00
Fuel, 37 00	Boots and shoes, . . 29 00	Books and papers, . . 4 25
Groceries, . . . 277 00	Clothing, 82 00	Sundries, 35 75
Meat, 70 75	Dry goods, 17 00	
Fish, 12 50	Societies, 6 00	

No. 26.

CARPENTER.

American.

EARNINGS of father, \$672

CONDITION.—Family numbers 4, parents and 2 children from three to seven years of age; one goes to school. Live in a tenement of 4 rooms in good and pleasant surroundings. The apartments are well furnished, also carpeted. Have a sewing and other labor saving machines. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake and tea.
Dinner. Bread, butter, meat, potatoes, vegetables, pie, tea.
Supper. Bread, butter, cheese, sauce, cake and tea.

COST OF LIVING, \$661

Rent, \$96 00	Milk, \$12 30	Societies, \$8 00
Fuel, 43 75	Boots and shoes, . . 17 50	Religion, 16 00
Groceries, . . . 265 80	Clothing, 44 00	Sundries, 43 82
Meat, 83 83	Dry goods, 13 00	
Fish, 8 00	Papers, 9 00	

No. 27.

CARPENTER.

American.

EARNINGS of husband, \$740

CONDITION.—Family numbers 2, man and wife. Board in a private family in a respectable neighborhood; have a private sitting-room, well furnished. Have a sewing-machine. The wife is a tailoress and earns enough during the year, to pay for clothes for herself and husband; she also makes the clothes. Have money in the savings bank. The board is good; meat three times a day.

COST OF LIVING, \$640

Board, \$520 00	Religion, \$18 00
Fuel, 10 00	Sundries, including two weeks' recreation, 85 00
Societies, 9 00	

No. 28.	CARPENTER.	American.
EARNINGS of father,		\$704
son, aged 15,		230
		<hr/> \$934

CONDITION.—Family numbers 5, parents and 3 children from six to fifteen years of age; two go to school. Live in a tenement of 5 rooms about a mile from shop, surroundings neat and clean, in a healthy neighborhood. The apartments are well furnished and all the rooms carpeted, except the kitchen. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake, pie and tea.
Dinner. Brown bread, white bread, butter, meat, potatoes, vegetables, pickles, fruit in season, pie, tea.
Supper. Bread, butter, sauce, cake, cheese, tea.

COST OF LIVING,				\$522	
Rent,	\$200 00	Fish,	\$14 30	Dry goods,	\$29 42
Fuel,	43 50	Milk,	27 40	Papers,	8 00
Groceries,	319 80	Boots and shoes,	27 20	Religion,	14 00
Meat,	94 76	Clothing,	80 00	Sundries,	64 02

No. 29.	CARPENTER.	American.
EARNINGS of father,		\$725

CONDITION.—Family numbers 4, parents and 2 children from three to seven years of age; one goes to school. Occupy a tenement of 4 rooms in a good locality and with agreeable surroundings. House is well furnished, with the parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter and what was left from dinner, cake and coffee.
Dinner. Meat, potatoes, bread and butter, vegetables, pie and tea.
Supper. Bread, butter, sauce, gingerbread, tea. Baked beans Saturday night and Sunday morning.

COST OF LIVING,				\$725	
Rent,	\$180 00	Fish,	\$12 70	Dry goods,	\$15 80
Fuel,	37 00	Milk,	22 96	Papers,	4 00
Groceries,	289 27	Boots and shoes,	30 00	Religion,	10 00
Meat,	80 53	Clothing,	50 00	Sundries,	12 14

No. 30.	CARPENTER.	American.
EARNINGS of father,		\$783

CONDITION.—Family numbers 4, parents and 2 children of seven and twelve years of age; both go to school. Have a tenement of 5 rooms pleasantly situated in good neighborhood and ample yard room and good sanitary arrangements. The rooms are well furnished and the parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, cold meat or eggs, doughnuts or cake and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie and tea.
Supper. Bread, butter, sauce or cheese, gingerbread and tea. Baked beans for breakfast on Sunday.

COST OF LIVING,				\$783	
Rent,	\$120 00	Fish,	\$12 00	Dry goods,	\$33 50
Fuel,	40 75	Milk,	18 40	Papers,	13 50
Groceries,	249 15	Boots and shoes,	26 00	Religion,	16 00
Meat,	94 80	Clothing,	87 00	Sundries,	72 40

No. 31.	CARPENTER.	American.
EARNINGS of father,		\$580
son, aged 15,		280
		<hr/> \$860

CONDITION.—Family numbers 4, parents and 2 children from twelve to fifteen years of age; one goes to school. Live in a tenement of 5 rooms very pleasantly situated in a good neighborhood. The apartments are well furnished and parlor carpeted. Have a piano. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie, tea.
Supper. Bread, butter, fish or cheese, gingerbread, tea.

COST OF LIVING,		\$800 75
Rent, \$144 00	Milk, \$28 34	Societies, \$9 00
Fuel, 36 80	Boots and shoes, . . 30 45	Religion, 18 00
Groceries, . . . 298 76	Clothing, 63 00	Sundries, 16 30
Meat, 108 17	Dry goods, 19 00	
Fish, 6 33	Books and papers, . . 22 00	

No. 32.	CARPENTER.	American.
EARNINGS of father,		\$636
son, aged 15,		280
		<hr/> \$916

CONDITION.—Family numbers 5, parents and 3 children from four to fifteen years of age; one goes to school. Live in a tenement of 6 rooms very pleasantly situated in a good neighborhood with agreeable surroundings. The apartments are furnished well and parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Hot biscuits, butter, meat or eggs, cake, coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pie.
Supper. Bread, butter, cake and tea. Have baked beans Saturday evening and Sunday morning.

COST OF LIVING,		\$985 50
Rent, \$200 00	Milk, \$36 40	Papers, \$6 00
Fuel, 60 00	Boots and shoes, . . 29 00	Societies, 10 00
Groceries, . . . 381 87	Clothing, 70 50	Sundries, 16 40
Meat, 118 17	Dry goods, 30 16	

No. 33.	CARPENTER.	American.
EARNINGS of father,		\$630

CONDITION.—Family numbers 3, parents and 1 child of four years of age. Have a tenement of 4 rooms with good surroundings. The rooms are well furnished and the parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, cake and coffee.
Dinner. Bread, butter, meat, potatoes, pie.
Supper. Bread, butter, cheese and tea.

COST OF LIVING,		\$630
Rent, \$144 00	Fish, \$5 63	Dry goods, \$14 00
Fuel, 40 00	Milk, 14 40	Papers, 8 00
Groceries, . . . 243 87	Boots and shoes, . . 16 00	Religion, 12 00
Meat, 81 29	Clothing, 41 00	Sundries, 9 81

No. 34.	CARPENTER.		American.
EARNINGS of father,			\$730
CONDITION.—Family numbers 5, parents and 3 children from three to eight years of age; two go to school. Occupy a tenement of 6 rooms, pleasantly situated in a good and healthy neighborhood. Sanitary arrangements are very good. There is a small flower-garden attached to the house. The rooms are well furnished and carpeted. Own a sewing-machine and other labor-saving machines. Family dresses well and attends church.			
FOOD.— <i>Breakfast.</i> Bread and butter, eggs, cake and coffee.			
<i>Dinner.</i> Bread, butter, meat, potatoes, vegetables in season, pie and tea.			
<i>Supper.</i> Bread and butter, cheese or sauce, cake and tea.			
COST OF LIVING,			\$730
Rent,	\$132 00	Milk,	\$15 40
Fuel,	44 00	Boots and shoes,	25 00
Groceries,	348 00	Clothing,	65 00
Meat,	87 50	Dry goods,	15 00
		Religion,	\$12 00
		Papers,	6 50
		Sundries,	29 00

No. 35.	CARPENTER.				American.
EARNINGS of father,					\$712
CONDITION.—Family numbers 4, parents and 2 children of six and ten years of age; both go to school. Occupy a tenement of 5 rooms in good neighborhood with healthy and pleasant surroundings. House is well furnished, with rooms carpeted. Have a piano and sewing-machine. Family dresses well.					
FOOD.—Breakfast.		Bread and butter, meat or eggs, cake and tea.			
Dinner.		Bread and butter, meat, potatoes, vegetables in season, pie.			
Supper.		Bread, butter, sauce and tea.			
COST OF LIVING,					\$717
Rent,	\$132 00	Fish,	\$9 00	Dry goods,	\$19 75
Fuel,	30 00	Milk,	13 64	Papers,	9 00
Groceries,	\$07 18	Boots and shoes,	24 00	Societies,	8 00
Meat,	82 60	Clothing,	55 00	Sundries,	17 33

No. 36.	CARPENTER.										American.						
EARNINGS of father,	\$619						
son, aged 14,	238						
											\$857						
CONDITION.—Family numbers 5, parents and 3 children from three to fourteen years of age; one goes to school. Have a tenement of 5 rooms, well located and with good surroundings. The rooms are well furnished and the parlor carpeted. Family dresses well.																	
FOOD.—Breakfast.		Bread, butter, meat, potatoes, cake and coffee.															
Dinner.		Bread, butter, meat, potatoes, vegetables, pie.															
Supper.		Bread, butter, sometimes cheese, gingerbread and tea.															
COST OF LIVING,		.	.	.	.	.	.	.	.	.	\$857
Rent,	.	.	.	\$156	00	Fish,	.	.	.	\$9	37	Dry goods,	.	.	.	\$27	00
Fuel,	.	.	.	49	75	Milk,	.	.	.	15	64	Papers,	.	.	.	5	75
Groceries,	.	.	.	395	49	Boots and shoes,	.	.	.	31	75	Sundries,	.	.	.	19	13
Meat,	.	.	.	107	12	Clothing,	.	.	.	40	00						

No. 37.

CARPENTER.

American.

EARNINGS of father,	\$700
son, aged 16,	320
	— \$1,020

CONDITION.—Family numbers 7, parents and 5 children from six to seventeen years of age; three go to school, but on account of poor health of the mother, the elder girls remain at home to assist in the housework. Live in a tenement of 5 rooms in a good locality, with pleasant and healthy surroundings, also have plenty of yard-room. The apartments are neat, clean and well furnished; the rooms are all carpeted. Family dresses well and attends church. Have a little money saved, but cannot increase it on account of sickness.

FOOD. — <i>Breakfast.</i>	Hot biscuits, brown bread, butter, meat or eggs, cake, pie and tea.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, fruit, fresh or canned, tea.
<i>Supper.</i>	Bread, butter, fish or cheese, cake, sauce and tea. Baked beans for breakfast on Sunday, but have no dinner.

COST OF LIVING,				\$1,020	
Rent,	\$168 00	Fish,	\$12 00	Dry goods,	\$24 00
Fuel,	54 00	Milk,	30 90	Books and papers, .	9 00
Groceries, . .	401 60	Boots and shoes, .	33 60	Sundries including	
Meat,	73 75	Clothing, . . .	150 00	doctor's bill, . . .	63 15

No. 38.

CARPENTER.

English.

EARNINGS of father,	\$825
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CONDITION.—Family numbers 5, parents and three children from three to ten years of age; two go to school. Occupy a tenement of 4 rooms with unclean and disagreeable surroundings. The house is well furnished and the parlor carpeted. Have a sewing-machine. Family dresses well.

FOOD. — <i>Breakfast.</i>	Bread, butter, cold meat, doughnuts and coffee.
<i>Dinner.</i>	Meat, potatoes, sometimes vegetables, bread, pie.
<i>Supper.</i>	Bread, butter, cheese and tea.

COST OF LIVING,				\$775	
Rent,	\$200 00	Fish,	\$7 39	Dry goods, . . .	\$18 80
Fuel,	43 00	Milk,	16 10	Papers,	10 00
Groceries, . .	297 30	Boots and shoes,	20 00	Societies, . . .	8 00
Meat,	86 41	Clothing, . . .	49 00	Sundries, . . .	19 00

No. 39.

CARPENTER.

English.

EARNINGS of father,	\$780
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CONDITION.—Family numbers 4, parents and 2 children of five and nine years of age. Have a tenement of 5 rooms very pleasantly situated in good neighborhood with healthy surroundings. The rooms are well furnished and carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD. — <i>Breakfast.</i>	Hot biscuit, butter, meat, warmed potatoes, doughnuts and tea.
<i>Dinner.</i>	Meat, potatoes, vegetables in season, bread, pie.
<i>Supper.</i>	Bread, butter, sauce, cake and tea.

COST OF LIVING,				\$780	
Rent,	\$168 00	Fish,	\$6 00	Dry goods, . . .	\$19 50
Fuel,	40 00	Milk,	14 67	Papers,	6 00
Groceries, . .	313 81	Boots and shoes,	27 00	Religion,	14 00
Meat,	102 40	Clothing, . . .	55 00	Sundries,	13 62

No. 40.	CARPENTER.			English.	
EARNINGS of father,				\$724	
CONDITION.—Family numbers 5, parents and 3 children from five to thirteen years of age; all go to school. Live in a tenement of 5 rooms, pleasantly situated in a good neighborhood with good surroundings. The apartments are well furnished and the parlor carpeted. Family dresses well and attends church. Buy all goods for cash.					
FOOD.— <i>Breakfast.</i>	Bread, butter, meat or eggs, cake, tea.				
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pickles, pudding.				
<i>Supper.</i>	Bread, butter, cheese, gingerbread and tea.				
COST OF LIVING,				\$724	
Rent,	\$132 00	Fish,	\$8 00	Dry goods,	\$22 00
Fuel,	36 00	Milk,	14 50	Papers,	4 00
Groceries,	297 24	Boots and shoes,	19 00	Religion,	14 00
Meat,	77 43	Clothing,	60 00	Sundries,	39 33

No. 41.	CARPENTER.		English.		
EARNINGS of father,			\$708		
CONDITION.—Family numbers 4, parents and 2 children of one and four years of age. Occupy a tenement of 5 rooms located about a mile from the shop, in a quiet, respectable neighborhood with good and healthy surroundings. The house is well furnished, with carpeted rooms, and kept very neat. Family dresses well. Has had no sickness in family for several years, and the general health is good. Can save a little money with economy, but would rather invest it in comforts for the family. The father has a life-policy for a thousand dollars.					
FOOD.— <i>Breakfast.</i>	Bread and butter, cold meat, cake and coffee.				
<i>Dinner.</i>	Bread and butter, meat, potatoes, vegetables in season, pickles, pudding or pie.				
<i>Supper.</i>	Bread and butter, cheese, pork, onions, sauce, cake and tea.				
COST OF LIVING,			\$730		
Rent,	\$144 00	Fish,	\$12 00	Dry goods,	\$23 00
Fuel,	33 50	Milk,	14 90	Papers,	4 00
Groceries,	277 36	Boots and shoes,	20 00	Societies,	6 00
Meat,	81 90	Clothing,	63 75	Sundries,	40 20

No. 42.	CARPENTER.										English.
EARNINGS of father, \$516											
daughter, aged 18, 307											
_____ \$823											
CONDITION.—Family numbers 6, parents and 4 children from seven to eighteen years of age; three go to school. Have a tenement of 6 rooms, pleasantly situated and with good surroundings. The rooms are well furnished and carpeted, and the house is orderly and clean. Family dresses well and attends church.											
FOOD.— <i>Breakfast.</i> Bread, butter, ham and eggs or fresh meat, cake or pie, tea and coffee.											
<i>Dinner.</i> Bread, butter, meat of some kind, potatoes, vegetables, pickles, pudding.											
<i>Supper.</i> Bread, butter, cheese, sometimes sauce, fruit in season, cake and tea.											
COST OF LIVING, \$867 18											
Groceries, . . . \$359 75 Milk, \$27 00 Religion, . . . \$12 00											
Rent, 150 00 Boots and shoes, . . 37 50 Books and papers, . . 5 00											
Fuel, 47 90 Clothing, 81 00 Sundries, 22 75											
Meat, 39 68 Dry goods, 24 00											

No. 43.

CARPENTER.

English.

EARNINGS of father, \$663

CONDITION.—Family numbers 4, parents and 2 children from three to nine years of age; one goes to school. Live in a tenement of 4 rooms in a good locality and pleasant surroundings. The apartments are furnished well, with the parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat, warmed potatoes and tea.

Dinner. Bread, meat, potatoes, sometimes vegetables, pie.

Supper. Bread, butter, sometimes fish and tea.

COST OF LIVING, \$663

Rent, \$120 00	Fish, \$4 86	Dry goods, . . . \$22 76
Fuel, 40 50	Milk, 32 36	Papers, 9 00
Groceries, . . . 269 68	Boots and shoes, . 18 50	Societies, . . . 10 00
Meat, 80 40	Clothing, . . . 41 00	Sundries, . . . 13 94

No. 44.

CARPENTER.

English.

EARNINGS of father, \$648

CONDITION.—Family numbers 3, parents and 1 child three years of age. Occupy a tenement of 4 rooms with good and pleasant surroundings. The house is well furnished and the parlor carpeted. Family dresses well and appears very respectable.

FOOD.—*Breakfast.* Bread and butter, meat or eggs, gingerbread or doughnuts, and coffee.

Dinner. Bread and butter, meat, potatoes, vegetables and pudding.

Supper. Bread and butter, cold meat or cheese, cake or pie, and tea.

COST OF LIVING, \$637 48

Rent, \$120 00	Milk, \$17 00	Papers, \$8 00
Fuel, 40 75	Boots and Shoes, . 20 00	Societies, . . . 8 00
Groceries, . . . 246 23	Clothing, . . . 45 00	Sundries, . . . 25 00
Meat, 83 00	Dry goods, . . . 24 50	

No. 45.

CARPENTER.

F. Canadian.

EARNINGS of father, \$623

CONDITION.—Family numbers 4, parents and 2 children of one year and a half and four years of age. Have a tenement of 4 rooms well situated and with good surroundings. The rooms are well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat and coffee.

Dinner. Meat, potatoes, vegetables, sometimes soup, bread, pie.

Supper. Bread, butter, cheese and tea.

COST OF LIVING, \$607

Rent, \$96 00	Fish, \$14 00	Dry goods, . . . \$15 00
Fuel, 48 50	Milk, 10 75	Papers, 4 00
Groceries, . . . 280 00	Boots and shoes, . 13 25	Sundries, . . . 28 08
Meat, 67 50	Clothing, . . . 30 00	

No. 46.	CARPENTER.	F. Canadian.
EARNINGS of father,		\$689
son, aged 17,		460
son, aged 15,		204
		<u>\$1,353</u>

CONDITION.—Family numbers 7, parents and 5 children from eight to seventeen years of age; three go to school. Live in a tenement of 6 rooms, in a good locality with pleasant surroundings. The apartments are well furnished, the parlor and 2 chambers carpeted. Family dresses well and attends church. Have money in savings,—bank adding to it every year.

FOOD.—*Breakfast.* Bread, butter, cold meat or fish, potatoes, pie, coffee.
Dinner. Rye bread, butter, meat, potatoes, vegetables, cake, pie.
Supper. Bread, butter, cold meat, cheese; sometimes fruit, cake and tea.

COST OF LIVING,			\$1.12
Rent, \$225 00	Fish, \$18 42	Dry goods,	\$23 00
Fuel, 61 00	Milk, 28 76	Papers,	6 00
Groceries, . . . 422 80	Boots and shoes, . . 43 80	Religion,	20 00
Meat, 113 70	Clothing, 91 70	Sundries,	60 82

No. 47.	CARPENTER.	German.
EARNINGS of father,		\$794

CONDITION.—Family numbers 6, parents and 4 children from one to thirteen years of age; two go to school. Occupy a tenement of 4 rooms in crowded neighborhood with unclean surroundings. House is well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread and butter, the remains of dinner, and coffee.
Dinner. Meat, potatoes, sometimes vegetables, bread, pie.
Supper. Bread, butter, gingerbread and tea.

COST OF LIVING,			\$794
Rent, \$163 00	Fish, \$5 11	Dry goods,	\$23 00
Fuel, 39 75	Milk, 26 50	Papers,	6 00
Groceries, . . . 352 40	Boots and shoes, . . 27 00	Sundries,	12 64
Meat, 80 20	Clothing, 52 80		

No. 48.	MASON.	American.
EARNINGS of father,		\$399

CONDITION.—Family numbers 4, parents and 2 children of six and fourteen years of age; both go to school. Have a tenement of 4 rooms, upstairs, and the surroundings clean and healthy. The house is well furnished and the rooms carpeted. Have a sewing-machine. The family dresses well, and are very intelligent.

FOOD.—*Breakfast.* Bread, butter, meat, cake and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pie and tea.
Supper. Bread, butter, preserved fruit, cake and tea.

COST OF LIVING,			\$325 54
Rent, \$192 00	Fish, \$3 60	Dry goods,	\$23 00
Fuel, 46 00	Milk, 40 20	Books and papers, . . 16 40	
Groceries, . . . 239 60	Boots and shoes, . . 33 50	Societies,	8 00
Meat, 110 74	Clothing, 92 00	Sundries,	20 40

No. 49.

MASON.

English.

EARNINGS of father, \$800

CONDITION.—Family numbers 3, parents and 1 child four years of age. Live in a tenement of 5 rooms in an agreeable locality with good surroundings. The apartments are furnished well and the rooms carpeted. Have a piano. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, gingerbread, coffee.*Dinner.* Bread, meat, potatoes, vegetables, pickles, pie or pudding.*Supper.* Bread, butter, fruit or cheese, tea. Have no dinner on Sunday.

COST OF LIVING, \$778 45

Rent, \$250 00	Milk, \$20 30	Societies, \$12 00
Fuel, 41 50	Boots and shoes, . . 24 00	Religion, 20 00
Groceries, . . . 206 24	Clothing, 62 00	Sundries, 15 20
Meat, 83 75	Dry goods, 20 26	
Fish, 5 20	Papers, 9 00	

No. 50.

MASON.

English.

EARNINGS of father, \$766

son, aged 17, 320

— \$1,086

CONDITION.—Family numbers 7, parents and 5 children from eight to seventeen years of age; four go to school. Occupy a tenement of 6 rooms in a good neighborhood with neat and healthy surroundings. House is well furnished and the parlor carpeted. Have a piano and sewing-machine. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat, potatoes, cake and tea.*Dinner.* Bread and butter, meat, potatoes, vegetables, pickles, pie or pudding and tea.*Supper.* Bread and butter, fish or cheese, cake and tea.

COST OF LIVING, \$1,066

Rent, \$200 00	Fish, \$14 60	Dry goods, \$32 00
Fuel, 58 00	Milk, 35 92	Papers, 9 00
Groceries, . . . 428 60	Boots and shoes, . . 40 00	Societies, 12 00
Meat, 119 39	Clothing, 93 00	Sundries, 23 49

No. 51.

MASON.

Irish.

EARNINGS of father, \$808

CONDITION.—Family numbers 5, parents and 3 children from four to sixteen years of age; two go to school. Have a tenement of 5 rooms, pleasantly situated in good neighborhood and the surroundings clean and healthy. The house is well furnished and the parlor carpeted. Have an organ and a sewing-machine. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat and what was left from dinner, gingerbread and coffee.*Dinner.* Meat, potatoes, sometimes vegetables, bread, pudding or pie.*Supper.* Bread, butter, sometimes fish, and tea.

COST OF LIVING, \$908

Rent, \$180 00	Fish, \$8 20	Dry goods, \$19 80
Fuel, 51 50	Milk, 14 20	Sundries, 13 23
Groceries, . . . 336 94	Boots and shoes, . . 26 00	
Meat, 97 13	Clothing, 61 00	

No. 52.	PAINTER.		American.
EARNINGS of father,	.	.	\$318
<p>CONDITION.—Family numbers 4, parents and 2 children from four to seven years of age; one goes to school. Live in a tenement of 5 rooms, about three-quarters of a mile from shop, very pleasantly situated, with good surroundings. The apartments are well furnished and rooms carpeted. Have a sewing and other labor-saving machines. Family dresses well.</p>			
FOOD.—Breakfast.	Bread, butter, meat or eggs, cake, tea.		
Dinner.	Bread, butter, meat, potatoes, vegetables, pickles, pie, tea.		
Supper.	Bread, butter, cheese or sauce, tea.		
COST OF LIVING,	.	.	\$770 00
Rent,	\$175 00	Fish,	\$6 00
Fuel,	53 50	Milk,	14 25
Groceries,	277 80	Boots and shoes,	21 50
Meat,	79 35	Clothing,	70 00
		Dry goods,	\$22 00
		Papers,	15 00
		Societies,	10 00
		Sundries,	19 00

No. 53.	PAINTER.		American.
EARNINGS of father,	.	.	\$900
wife,	.	.	90
			\$750

CONDITION.—Family numbers 3, parents and one child seven years of age. Occupy a tenement of 3 rooms up stairs, in a crowded locality, with surroundings not very neat. House is well furnished, rooms carpeted. Own a sewing-machine on which the mother earned \$20 during the year, besides making her own and child's clothes. Family dresses well.

FOOD.—Breakfast.	Bread and butter, cold meat, cake and coffee.		
Dinner.	Meat, potatoes, vegetables, bread, pie.		
Supper.	Bread, butter, gingerbread, tea.		
COST OF LIVING,	.	.	\$605 30
Rent,	\$168 00	Fish,	\$4 62
Fuel,	43 00	Milk,	18 40
Groceries,	220 16	Boots and shoes,	19 00
Meat,	75 42	Clothing,	30 50
		Dry goods,	\$39 50
		Books and papers,	25 00
		Societies,	9 00
		Sundries,	21 40

No. 54.	PLASTERER.		English.
EARNINGS of father,	.	.	\$760

CONDITION.—Family numbers 4, parents and 2 children of nine and thirteen years of age; both go to school. Have a tenement of 4 rooms, with clean surroundings, but very little yard room. House is well furnished. Have a sewing and other labor-saving machines. Family dresses well.

FOOD.—Breakfast.	Bread, butter, and what was left from dinner, gingerbread and coffee.		
Dinner.	Meat, potatoes, sometimes vegetables, pickles, bread, pudding or pie.		
Supper.	Bread, butter, cheese, cake and tea.		
COST OF LIVING,	.	.	\$721
Rent,	\$180 00	Milk,	\$17 60
Fuel,	30 60	Boots and shoes,	24 00
Groceries,	257 29	Clothing,	48 80
Meat,	61 30	Dry goods,	18 95
		Books and papers,	\$14 00
		Societies,	16 00
		Sundries,	23 45

No. 55.	PLASTERER.	<i>Irish.</i>
EARNINGS of father,		\$728
son, aged 17,		260
		<hr/> \$988

CONDITION.—Family numbers 7, parents and 5 children from four to seventeen years of age; three go to school. Live in a tenement of 4 rooms, locality and surroundings quite fair. The apartments are well furnished and one room carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, salt pork or fish, potatoes, coffee.
Dinner. Bread, meat, potatoes, cabbage, pie.
Supper. Bread, butter, gingerbread and tea.

COST OF LIVING,		\$965
Rent, \$200 00	Fish, \$10 30	Dry goods, . . . \$24 00
Fuel, 48 00	Milk, 44 60	Papers, 8 00
Groceries, . . . 386 83	Boots and shoes, . . 39 00	Societies, 6 00
Meat, 104 16	Clothing, 80 00	Sundries, 14 11

No. 56.	SHIP-CARPENTER.	<i>American.</i>
EARNINGS of father,		\$740

CONDITION.—Family numbers 4, parents and 2 children of ten and sixteen years of age; both go to school, and are very bright and intelligent. They own a house of 7 rooms very nicely situated in a good and pleasant neighborhood. Every room is carpeted, except the kitchen. Have a piano, also a sewing and other labor-saving machines. Family dresses well and attends church. The clothing costs but little, as all, except the father's, is made at home.

FOOD.—*Breakfast.* Hot biscuit, butter, ham or eggs, with cold meat left from dinner, cake and coffee.
Dinner. Bread, butter, meat, potatoes, pickles, vegetables, cake, pudding and tea.
Supper. Bread, butter, cheese, sauce, cake, pie and tea. Baked beans two meals per week, and fish one day for dinner. Cold dinner on Sunday.

COST OF LIVING,		\$648 08
Groceries, . . . \$236 95	Milk, \$23 75	Religion, \$24 00
Fuel, 52 00	Boots and shoes, . . 25 00	Societies, 9 00
Meat, 77 84	Clothing, 57 00	Books and papers, . 12 00
Fish, 16 54	Dry goods, 56 00	Sundries, 58 00

No. 57.	STAIR-BUILDER.	<i>American.</i>
EARNINGS of father,		\$850

CONDITION.—Family numbers 5, parents and 3 children from one to nine years of age; two go to school. Occupy a tenement of 5 rooms upstairs, in a quiet neighborhood with good surroundings. The house is nicely furnished and the rooms carpeted. Family dresses well, and is taken care of respectably when at work and in good health. Has a few funds in savings bank, deposited ten years ago; but has not been able to add any since.

FOOD.—*Breakfast.* Bread and butter, cold meat, eggs or ham, cake or pie and tea.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, tea.
Supper. Bread and butter, cold meat or cheese, sauce, cake and tea. Baked beans Saturday night.

COST OF LIVING,		\$850
Rent, \$168 00	Fish, \$9 75	Dry goods, . . . \$16 00
Fuel, 44 50	Milk, 32 25	Societies, 5 00
Groceries, . . . 342 95	Boots and shoes, . . 21 00	Books and papers, . 12 00
Meat, 81 60	Clothing, 76 50	Sundries, 40 45

Skilled.	BOOTS, SHOES AND LEATHER.		39 Families.
No. 58.	BOOT-MAKER.		America.
EARNINGS of father,			\$680
CONDITION.—Family numbers 5, parents and 3 children from two to nine years of age; two go to school. Occupy a tenement of 5 rooms in a healthy locality with good surroundings. House is well furnished, with the parlor carpeted. Have a sewing-machine. Family dresses well. Had sickness in family last year, which was the cause of their running in debt.			
FOOD.— <i>Breakfast.</i> Bread and butter, meat or eggs, cake, coffee.			
<i>Dinner.</i> Brown bread and butter, meat and potatoes, vegetables, pickles, pie and tea.			
<i>Supper.</i> Bread and butter, sauce, cake, tea.			
COST OF LIVING,			\$712 50
Rent,	\$120 00	Milk,	\$15 40 Sundries, including
Fuel,	42 75	Boots and shoes,	10 00 doctor's bill,
Groceries,	319 29	Clothing,	47 00
Meat,	82 00	Dry goods,	20 00
			\$35 50

No. 59.	BOOT-MAKER.			English.	
EARNINGS of father,	.	.	.	\$651	
CONDITION.—Family numbers 3, parents and 1 child of five years of age; attends school. Have a tenement of 4 rooms, well situated in good neighborhood with pleasant surroundings. The rooms are well furnished and the parlor carpeted. Family dresses well.					
FOOD.— <i>Breakfast.</i> Bread, butter, cold meat, cake and coffee.					
<i>Dinner.</i> Bread, butter, meat, potatoes, vegetables, pie and tea.					
<i>Supper.</i> Bread, butter, cheese or cold meat, gingerbread and tea. Baked beans Saturday night.					
COST OF LIVING,				\$621	
Rent,	\$96 00	Meat,	\$31 25	Clothing,	\$53 00
Fuel,	48 75	Milk,	19 80	Dry goods,	16 00
Groceries,	283 50	Boots and shoes,	8 00	Sundries,	14 70

No. 60.	BOOT-MAKER.	F. Canadian.
EARNINGS of father,		\$617
daughter, aged 15,		185
		_____ \$796
CONDITION.—Family numbers 5, parents and 3 children from six to fifteen years of age; two go to school. Live in a tenement of four rooms, pleasantly situated. The apartments are furnished moderately well and kept in good condition. Family dresses well.		
FOOD.— <i>Breakfast.</i> Bread, butter, the remains left after dinner, gingerbread and coffee.		
<i>Dinner.</i> Bread, soup, meat, potatoes, vegetables, pie.		
<i>Supper.</i> Bread, butter, cake and tea.		
COST OF LIVING,		\$760 00
Rent,	\$150 00	Milk, \$27 60
Fuel,	40 50	Societies, \$4 00
Groceries,	302 78	Boots and shoes, 28 00
Meat,	87 50	Religion, 12 00
Fish,	12 00	Clothing, 49 70
		Sundries, 21 00
		Dry goods, 15 00
		Papers, 8 00

No. 61.

BOOT-MAKER.

Irish.

EARNINGS of father, \$632

CONDITION.—Family numbers 4, parents and 2 children of six and ten years of age; both go to school. Occupy a tenement of 4 rooms, situated in a pleasant neighborhood with good surroundings; ample yard-room with small garden. House is well furnished with parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread and butter, eggs or fish, coffee.*Dinner.* Bread and butter, meat, potatoes, sometimes vegetables, pie.*Supper.* Bread and butter, cheese, gingerbread and tea.

COST OF LIVING, \$632

Rent, . . . \$100 00	Fish, . . . \$14 00	Dry goods, . . . \$17 50
Fuel, . . . 46 00	Milk, . . . 12 80	Papers, . . . 6 00
Groceries, . . . 291 42	Boots and shoes, . . . 10 00	Societies, . . . 7 00
Meat, . . . 47 32	Clothing, . . . 51 50	Sundries, . . . 23 46

No. 62.

CURRIER.

American.

EARNINGS of father, \$684

CONDITION.—Family numbers 4, parents and 2 children of three and seven years of age; one goes to school. Have a tenement of 4 rooms, well situated and with good surroundings. House well furnished and the rooms carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, sometimes meat or eggs, gingerbread and coffee.*Dinner.* Bread, meat, potatoes, vegetables, pie.*Supper.* Bread, butter, cheese or fish and tea.

COST OF LIVING, \$673 59

Rent, . . . \$120 00	Fish, . . . \$7 62	Dry goods, . . . \$17 38
Fuel, . . . 42 60	Milk, . . . 19 30	Papers, . . . 8 00
Groceries, . . . 278 91	Boots and shoes, . . . 20 00	Societies, . . . 6 00
Meat, . . . 76 53	Clothing, . . . 44 85	Sundries, . . . 32 40

No. 63.

MOROCCO-DRESSER.

English.

EARNINGS of father, \$600

son, aged 16, 396

son, aged 14, 198

— \$1,194

CONDITION.—Family numbers 7, parents and 5 children from five to sixteen years of age; three go to school. Live in a tenement of 6 rooms in a good and healthy locality; have plenty of yard-room with a small flower-garden attached. The apartments are well furnished and carpeted. Own an organ, also a sewing and other labor-saving machines. The sitting-room is tastefully adorned with house-plants. Family subscribes for two magazines and three papers, and on the whole are very intelligent for working people. Do not save much money, prefer to expend it for home comforts.

FOOD.—*Breakfast.* Bread, butter, broiled meat or eggs and ham, cake or pie, tea or coffee.*Dinner.* Bread, butter, meat, potatoes, vegetables, pickles, cake, pudding.*Supper.* Bread, Graham bread, butter, cheese, fresh or preserved fruit, cake and tea.

COST OF LIVING, \$1,098

Rent, . . . \$220 00	Milk, . . . \$23 50	Books and papers, . . . \$14 00
Fuel, . . . 54 00	Boots and shoes, . . . 42 60	Societies, . . . 8 00
Groceries, . . . 395 90	Clothing, . . . 152 00	Sundries, . . . 51 40
Meat, . . . 102 60	Dry goods, . . . 29 00	

No. 64.	MOROCCO-DRESSER.	<i>Irish.</i>
EARNINGS of father,		\$520
son, aged 14,		180
		— \$700

CONDITION.—Family numbers 6, parents and 4 children from one to fourteen years of age; one only goes to school. Occupy a tenement of 5 rooms, in a poor locality with unpleasant surroundings. The yard is covered with refuse from the house, rendering it very disagreeable. The rooms are moderately furnished and as neat as the surroundings permit, although there are no carpets. Family dresses poorly and saves money.

FOOD.—*Breakfast.* Bread and butter and the remains of dinner, occasionally pie, coffee.
Dinner. Meat, potatoes, vegetables, bread.
Supper. Bread, butter, cheese or salt fish, cake, tea.

COST OF LIVING,				\$644 37
Rent, \$144 00	Fish, \$10 00	Dry goods,	\$12 00	
Fuel, 38 00	Milk, 14 70	Sundries,	23 00	
Groceries, . . . 206 90	Boots and shoes, . . 19 70			
Meat, 62 78	Clothing, 24 20			

No. 65.	SHOE-CHANNELLER.	<i>American.</i>
EARNINGS of father,		\$714

CONDITION.—Family numbers 4, parents and 2 children of one and six years of age; one goes to school. Have a tenement of 6 rooms, pleasantly surrounded, in suburbs, with garden attached. House is well furnished, and every room, except the kitchen, carpeted; all the rooms kept neat and clean. Have a piano and sewing-machine. Family dresses well, and are in good circumstances for working people. The father worked about eight months and a half last year. Has a little money saved, and adds a little every year.

FOOD.—*Breakfast.* Bread, graham bread, butter, meat, warmed potatoes, pie and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pudding, cake and tea.
Supper. Bread, butter, sauce, cheese, pie and tea.

COST OF LIVING,				\$651
Rent, \$200 00	Fish, \$17 22	Dry goods,	\$14 00	
Fuel, 39 60	Milk, 14 40	Societies,	7 00	
Groceries, . . . 216 24	Boots and shoes, . . 16 00	Books and papers, . . 6 00		
Meat, 61 90	Clothing, 66 90	Sundries,	20 04	

No. 66.	SHOE-CUTTER.	<i>American.</i>
EARNINGS of father,		\$412
at other work,		230
		— \$632

CONDITION.—Family numbers 3, parents and 1 child of two years of age. Live in a tenement of 5 rooms, pleasantly situated. The apartments are furnished well and carpeted. Have a sewing-machine. Family dresses well and attends church. On account of dullness of trade, worked only seven months last year, and, in order to procure a livelihood, had to work at other trades. Have some money in savings bank, but no prospect of increasing it.

FOOD.—*Breakfast.* Bread, butter, meat, pie, cake, tea.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding and tea.
Supper. Bread, butter, cake, sauce, sometimes fruit or honey. Preserve fruit in the season and use it every day during winter. Baked beans Sunday morning.

COST OF LIVING,				\$632
Rent, \$100 00	Boots and shoes, . . \$21 90	Religion,	\$16 00	
Fuel, 41 75	Clothing, 76 60	Societies,	8 00	
Groceries, . . . 196 00	Dry goods, 16 25	Sundries,	29 75	
Meat and fish, . . 69 75	Carpet, 28 50			
Milk, 14 60	Books and papers, . . 13 00			

No. 67.	SHOE-CUTTER.	<i>Irish.</i>
EARNINGS of father,		\$482
daughter, aged 16,		308
son, aged 14,		205
		<hr/> \$995

CONDITION.—Family numbers 7, parents and 5 children from four to sixteen years of age; two go to school. Occupy a tenement of 6 rooms, with a small flower-garden attached, well situated in the suburbs. The house is well furnished, with parlor carpeted, kept neatly and in good order. Have a sewing and a wringing machine. Family dresses well and attends church. Own a little property, but it is not all paid for yet; could soon do so if trade was better.

FOOD.—*Breakfast.* Bread and butter, cold meat or fish, potatoes, cake and coffee.
Dinner. Meat, potatoes, bread, butter, vegetables, pie or pudding.
Supper. Bread and butter, sometimes eggs, cheese or sauce, pie and tea. Have fish for dinner once a week.

COST OF LIVING,				\$398
Rent, \$200 00	Fish, \$16 00	Dry goods,		\$28 00
Fuel, 51 00	Milk, 17 23	Papers,		7 00
Groceries, 362 00	Boots and shoes, 23 12	Sundries,		42 00
Meat, 81 90	Clothing, 69 75			

No. 68.	SHOE-LASTER.	<i>American.</i>
EARNINGS of father,		\$495

CONDITION.—Family numbers 4, parents and 2 children of one and five years of age. Have a tenement of 5 rooms situated in a poor neighborhood; the surroundings unpleasant and disagreeable. The house well furnished and clean. Family very economical, but dresses respectably. The earnings are \$150 less than they were two years ago and the cost of living the same; ran in debt last year \$25.

FOOD.—*Breakfast.* Bread, butter, what is left from dinner, sometimes eggs or meat, and coffee.
Dinner. Meat, potatoes, vegetables in season, bread and tea.
Supper. Bread, butter, cheese or sauce, cake and tea. Baked beans Saturday night and Sunday morning.

COST OF LIVING,				\$520
Rent, \$144 00	Fish, \$8 00	Dry goods,		\$16 00
Fuel, 31 60	Milk, 13 90	Sundries,		13 00
Groceries, 198 00	Boots and shoes, 12 75			
Meat, 54 75	Clothing, 28 00			

No. 69.	SHOE-LASTER.	<i>Irish.</i>
EARNINGS of father,		\$508
daughter, aged 14,		196
		<hr/> \$704

CONDITION.—Family numbers 5, parents and 3 children from six to fourteen years of age; two go to school. Live in a tenement of 4 rooms, situated in an unpleasant and unhealthy locality. The apartments are furnished moderately well. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, potatoes, coffee.
Dinner. Bread, meat or fish, potatoes.
Supper. Bread, butter and tea.

COST OF LIVING,				\$749 40
Rent, \$150 00	Fish, \$12 50	Dry goods,		\$19 60
Fuel, 42 75	Milk, 23 74	Sundries,		12 30
Groceries, 337 85	Boots and shoes, 13 00			
Meat, 86 32	Clothing, 51 25			

No. 70.	SHOE-MAKER.	<i>Irish.</i>
EARNINGS of father,		\$308
daughter, aged 16,		203
son, aged 14,		200
		<hr/> \$711

CONDITION.—Family numbers 6, parents and 4 children from five to sixteen years of age; two only go to school. Occupy a tenement of 6 rooms, well situated, but in a narrow street, with little yard-room. House is neat and well furnished. Family dresses well and is respectable. The son who works attends school three months in the year. Find it almost impossible to save money.

FOOD.—*Breakfast.* Bread, butter, the remains of the dinner, with a little fresh fish or meat and sometimes eggs and cake, tea.
Dinner. Meat and potatoes, vegetables, bread and butter, pudding or pie.
Supper. Bread, butter, cheese or sauce, cake or gingerbread and tea.

COST OF LIVING,				\$245	
Rent,	\$100 00	Fish,	\$17 00	Dry goods,	\$26 50
Fuel,	52 50	Milk,	28 00	Books and papers,	6 00
Meat,	92 60	Boots and shoes,	33 60	Sundries,	38 21
Groceries,	369 84	Clothing,	84 75		

No. 71.	SHOE-TRIMMER.	<i>American.</i>
EARNINGS of father,		\$676

CONDITION.—Family numbers 3, parents and 1 child four years of age. Have a pleasant and convenient cottage of 5 rooms, with good surroundings and a pleasant neighborhood; also a flower-garden. The rooms are well furnished and carpeted. Have a sewing and other labor-saving machines. Family dresses well and attends church. Can not save money; worked only eight months last year, and have to be very economical to make a living.

FOOD.—*Breakfast.* Hot biscuit, brown bread, butter, eggs or meat, cake and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pie and tea.
Supper. Bread, butter, sauce or cheese, cake and tea.

Cost of Living,				\$476	
Rent,	\$200 00	Milk,	\$13 75	Societies,	\$6 00
Fuel,	42 90	Boots and shoes,	19 62	Books and papers,	4 00
Groceries,	199 30	Clothing,	54 75	Sundries,	23 63
Meat,	63 95	Dry goods,	24 00		
Fish,	12 00	Religion,	12 00		

No. 72.	SHOE-TRIMMER.	<i>American.</i>
EARNINGS of father,		\$574
daughter, aged 17,		225
		<hr/> \$800

CONDITION.—Family numbers 5, parents and 3 children from seven to seventeen years of age. Live in a cottage of 6 rooms, pleasantly situated in a good and healthy neighborhood. The apartments are well furnished and carpeted. Own a sewing and other labor-saving machines; also a piano. The house is kept remarkably neat and clean, both inside and out. Have money in savings bank; endeavor to save a little every year as a provision against sickness and old age.

FOOD.—*Breakfast.* Hot biscuit, butter, meat, fish or eggs, cake or pie, coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, fruit in season, tea.
Supper. Bread, butter, sometimes cold ham, cheese or sauce, pie or cake, tea. Baked beans Sunday morning; have no dinner.

COST OF LIVING,				\$304 45	
Rent,	\$120 00	Milk,	\$27 60	Religion,	\$12 00
Fuel,	47 75	Boots and shoes,	21 00	Societies,	6 00
Groceries,	325 60	Clothing,	96 50	Sundries,	24 00
Meat,	76 30	Dry goods,	23 00		
Fish,	14 20	Books and papers,	7 50		

No. 73.	SHOE-TRIMMER.	American.
EARNINGS of father,		\$518
at other work,		130
		<hr/> \$648

CONDITION.—Family numbers 4, parents and 2 children of five and seven years of age; both go to school. Occupy a tenement of 5 rooms, with good surroundings. House is well furnished. Family dresses well. The extra money earned for other work was when the shoe business was dull.

FOOD.—*Breakfast.* Hot biscuit and butter, meat or eggs, cake, coffee.
Dinner. Brown bread and butter, meat, potatoes, vegetables, pickles, pie, and tea.
Supper. Bread and butter, sauce, cake and tea.

COST OF LIVING,				\$648
Rent, \$100 00	Fish, \$7 00	Dry goods,		\$23 00
Fuel, 45 00	Milk, 13 21	Papers,		6 00
Groceries, . . . 309 71	Boots and shoes, . . 9 00	Societies,		8 00
Meat, 60 30	Clothing, 41 50	Sundries,		16 28

No. 74.	SHOEMAKER.	American.
EARNINGS of father,		\$481
son, aged 14,		237
		<hr/> \$718

CONDITION.—Family numbers 4, parents and 2 children of eight and fourteen years of age; one goes to school. Have a tenement of 5 rooms in a good neighborhood, with clean and pleasant surroundings. The house is well furnished and the parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat, cake and tea.
Dinner. Bread, butter, meat, potatoes, sometimes vegetables, pie.
Supper. Bread, butter, sauce and tea.

COST OF LIVING,				\$718
Rent, \$144 00	Milk, \$17 40	Societies,		\$6 00
Fuel, 43 80	Boots and shoes, . . 10 50	Religion,		12 00
Groceries, . . . 811 12	Clothing, 48 00	Sundries,		14 28
Meat, 76 02	Dry goods, 20 00			
Fish, 6 00	Papers, 8 00			

No. 75.	SHOEMAKER,	American.
EARNINGS of father,		\$519
son, aged 14,		248
		<hr/> \$767

CONDITION.—Family numbers 5, parents and 3 children from six to fourteen years of age; two go to school. Live in a tenement of 5 rooms in a clean and healthy locality. The apartments are furnished well, and the parlor carpeted. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, remains left from dinner, tea.
Dinner. Bread, butter, meat, potatoes, vegetables and pie.
Supper. Bread, butter, cheese or sauce, tea. Baked beans for Sunday morning.

COST OF LIVING,				\$767
Rent, \$162 00	Fish, \$6 54	Dry goods,		\$25 00
Fuel, 49 50	Milk, 13 78	Papers,		6 00
Groceries, . . . 326 21	Boots and shoes, . . 12 00	Religion,		12 00
Meat, 94 37	Clothing, 43 20	Sundries,		16 40

No. 76.	SHOEMAKER.	American.
EARNINGS of father,		\$600
at other work,		125
		<u>\$725</u>

CONDITION.—Family numbers 4, parents and 2 children of four and seven years of age; one goes to school. Occupy a tenement of 4 rooms in a good locality with pleasant surroundings. The house is well furnished and the rooms carpeted. Have a sewing-machine. Family dresses well.

FOOD.— <i>Breakfast.</i>	Hot biscuit, butter, meat, cake and coffee.
<i>Dinner.</i>	Meat, potatoes, bread, butter, pickles, pie, tea.
<i>Supper.</i>	Bread, butter, sauce, gingerbread and tea.

COST OF LIVING,			\$719
Rent, \$150 00	Fish, \$7 86	Dry goods,	\$20 00
Fuel, 47 86	Milk, 15 06	Papers,	8 00
Groceries, 286 60	Boots and shoes, 8 00	Sundries,	23 00
Meat, 101 42	Clothing, 51 00		

No. 77.	SHOEMAKER.	American.
EARNINGS of father,		\$480
son, aged 16,		230
son, aged 14,		180
		<u>\$890</u>

CONDITION.—Family numbers 5, parents and 3 children; one goes to school all the time, and the others when business is dull; father intends to let them have three months schooling every year. Have a nice tenement of 6 rooms, about ten minutes' walk from shop, in a good neighborhood and healthy locality. The house is well furnished and parlor carpeted. Have a sewing and other labor-saving machines. Family dresses well. The father worked eight months last year and earned from \$12 to \$17 per week. He hoped that the bureau would correct a false statement, that had been published in several papers, that shoemakers averaged \$18 per week, as such a correction was needed.

FOOD.— <i>Breakfast.</i>	Hot biscuit, bread, butter, fried ham or eggs or cheese, cake and coffee.
<i>Dinner.</i>	Bread, butter, beef, mutton or fresh pork, potatoes, vegetables, pudding or pie, and tea.
<i>Supper.</i>	Bread, butter, cheese, cake, meat, if any left from dinner, and tea. Baked beans on Sunday, and fish one day in the week.

COST OF LIVING,			\$822 15
Rent, \$200 00	Meat and fish, \$70 75	Dry goods,	\$18 00
Fuel, 48 50	Milk, 15 00	Boots and shoes,	17 00
Groceries, 364 90	Clothing, 68 00	Sundries,	20 00

No. 78.	SHOEMAKER.	American.
EARNINGS of husband,		\$570
wife,		280
		<u>\$850</u>

CONDITION.—Family numbers 2. Board in a private family and live very comfortably. Owing to the dullness of trade, only worked about eight months and a half of last year, but managed to save about \$300; could have increased the sum, had business been better.

COST OF LIVING,			\$645 50
Board for husband and wife, \$468 00	Religion,		\$15 00
Clothing and dry goods, 102 50	Societies,		10 00
Boots and shoes, 10 00	Sundries,		40 00

No. 79.	SHOEMAKER.	American.
EARNINGS of father,		\$406
daughter, aged 15,		200
son, aged 17,		306
		<u>\$1,002</u>

CONDITION.—Family numbers 7, parents and 5 children from one to seventeen years of age; two go to school besides the eldest girl, who works also four months in the year. Occupy a tenement of 6 rooms, pleasantly situated, with parlor and bed-rooms carpeted. Have a piano and sewing-machine. Family dresses well and attends church; are in very good circumstances for working people.

FOOD.—*Breakfast.* Hot biscuits, butter, eggs or meat, sometimes griddle-cakes, cake or pie, bread, tea or coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pudding or pie, cake, pickles and tea.
Supper. Bread, butter, cold meat or cheese, sometimes sauce, cake or pie, tea.
 Have baked beans two meals a week and fish for dinner once a week

COST OF LIVING,			\$979 47
Rent,	\$225 00	Milk,	\$28 00
Fuel,	56 00	Clothing,	96 00
Groceries,	390 84	Dry goods,	26 00
Meat and fish,	72 63	Boots and shoes,	22 00
		Religion,	\$20 00
		Societies,	16 00
		Sundries, taxes, school-books, etc.,	27 00

NOTE.—Father's wages range from \$12 to \$16 per week when working; only worked eight months last year. Business has been dull for a year or two. Can not keep family out of earnings. The father had seen it stated that shoemakers earned \$18 per week on an average; thought this was not true as far as Haverhill was concerned. Did not earn \$10 a week last year, and worked all the time he could, which was about eight months.

No. 80.	SHOEMAKER.	American.
EARNINGS of father,		\$552

CONDITION.—Family numbers 6, parents and 4 children from two to sixteen years of age; the two elder go to school. Have a tenement of 6 rooms situated in a pleasant neighborhood. The rooms are well-furnished and carpeted, and the house kept clean and orderly. Family dresses respectably and well, and attends church. On account of the shoe business being very dull for the past two years, the family has had a hard struggle to pay bills, and during the last year has run behind some \$70, as there was work only eight months and a half. Had a little money in the savings bank, but was obliged to use it. The oldest child will begin work at the close of the present school term. This family is very economical. Had no sickness; bought a few clothes.

FOOD.—*Breakfast.* Bread, butter, hash or potatoes warmed from the day before, doughnuts or cake, coffee.
Dinner. Meat, potatoes, pie or pudding, and tea.
Supper. Bread, butter, sauce or cheese, cake and tea. Buckwheat or griddle-cakes occasionally for breakfast. Baked beans on Saturday night and Sunday morning.

COST OF LIVING,			\$822
Rent,	\$200 00	Milk,	\$18 00
Fuel,	36 50	Boots and shoes,	16 00
Groceries,	260 00	Clothing and dry goods,	28 50
Meat,	52 00	Sundries, taxes, etc.,	11 00

No. 81.	SHOEMAKER.	American.
EARNINGS of father,		\$800
son, aged 14,		190
		— \$798

CONDITION.—Family numbers 5, parents and 3 children from six to fourteen years of age; two go to school. Live in a tenement of 6 rooms, pleasantly situated, with good surroundings. The apartments are furnished well and parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake, tea.
Dinner. Bread, butter, meat, potatoes, vegetables, pudding or pie, tea.
Supper. Bread, butter, cheese, cake, tea.

COST OF LIVING,				\$785 74	
Rent,	\$120 00	Fish,	\$11 00	Dry goods,	\$33 50
Fuel,	53 00	Milk,	23 17	Papers,	8 00
Groceries,	840 47	Boots and shoes,	6 00	Religion,	10 00
Meat,	80 00	Clothing,	79 00	Sundries,	21 00

No. 82.	SHOEMAKER.	American.
EARNINGS of father,		\$540
son, aged 14,		200
		— \$780

CONDITION.—Family numbers 4, parents and 2 children of eight and fourteen years of age; one goes to school. Occupy a tenement of 4 rooms, in a good locality, with pleasant surroundings. House is well furnished, with parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread and butter, eggs or meat, coffee.
Dinner. Bread and butter, meat, potatoes, sometimes vegetables, pie.
Supper. Bread and butter, doughnuts and tea. Baked beans Sunday morning.

COST OF LIVING,				\$760	
Rent,	\$132 00	Milk,	\$18 50	Papers,	\$5 00
Fuel,	51 00	Boots and shoes,	12 00	Societies,	8 00
Groceries,	\$31 67	Clothing,	53 00	Religion,	14 00
Meat,	92 06	Dry goods,	18 00	Sundries,	21 77

No. 83.	SHOEMAKER.	American.
EARNINGS of father,		\$536
other work,		75
		— \$611

CONDITION.—Family numbers 4, parents and 2 children of four and ten years of age; one goes to school. Have a tenement of 4 rooms, besides a sink-room; the surroundings very unpleasant, especially in the rear, on account of considerable refuse, which is very disagreeable, if not unhealthy. One room is carpeted. Family dresses well and looks healthy. Besides the amount earned in the shop, the father earned \$75 laboring for others; has a little money in the savings bank, but cannot save any at present, as business is dull and trade uncertain. On account of sickness of the mother, last year, more than \$40 were spent for nurse and medicine, which is not included in the cost of living.

FOOD.—*Breakfast.* Bread, butter, cold meat and warmed potatoes, pie and tea.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, and tea.
Supper. Bread, butter, cheese or sauce, cake and tea. Baked beans on Saturday night and Sunday morning; no regular dinner, but lunch, on Sunday.*

Cost of Living,				\$614 31	
Rent,	\$72 00	Milk,	\$26 40	Books and papers,	\$6 00
Fuel,	47 00	Boots and shoes,	23 50	Sundries,	16 00
Groceries,	249 75	Clothing,	76 80		
Meat,	69 86	Dry goods,	21 00		

No. 84.	SHOEMAKER.	American.
EARNINGS of father,		\$531
wife,		100
		— \$631

CONDITION.—Family numbers 3, parents and 1 child five years of age, who goes to school. Occupy a tenement of 4 rooms, in a good locality, with healthy surroundings. House is well furnished and the parlor carpeted. Have a sewing-machine, on which the wife earned \$100 last year, besides doing her housework. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat, cake, tea.
Dinner. Bread, butter, meat, potatoes, vegetables, pie, tea.
Supper. Bread, butter, sauce, gingerbread, tea. Baked beans Sunday morning.

COST OF LIVING,				\$610	
Rent,	\$120 00	Fish,	\$6 00	Dry goods,	30 00
Fuel,	39 75	Milk,	12 20	Papers,	14 00
Groceries,	225 37	Boots and shoes,	9 00	Societies,	9 00
Meat,	69 41	Clothing,	21 00	Sundries,	45 27

No. 85.	SHOEMAKER.	American.
EARNINGS of father,		\$561

CONDITION.—Family numbers 3, parents and 1 child four years of age. Occupy a tenement of 4 rooms, in a convenient locality, with good surroundings. The house is well furnished and the parlor carpeted. Family dresses well and appears very comfortable. Can just make a living. If the father had steady work, as others have in different branches of business, he could save money, but he only works about nine months in the year, sometimes not that.

FOOD.—*Breakfast.* Bread, butter, meat and warmed potatoes, cake and coffee.
Dinner. Meat, potatoes, sometimes vegetables, pickles, bread, butter, pudding or pie.
Supper. Bread, butter, cheese or sauce, gingerbread and tea. Baked beans Sunday morning.

Cost of Living,				\$561	
Rent,	\$46 00	Fish,	\$12 00	Dry goods,	\$15 00
Fuel,	43 00	Milk,	13 60	Papers,	6 00
Groceries,	183 04	Boots and shoes,	14 50	Societies,	5 00
Meat,	74 21	Clothing,	52 00	Sundries,	46 66

No. 86.	SHOEMAKER.	American.
EARNINGS of father,		\$546
son, aged 14,		192
		— \$738

CONDITION.—Family numbers 4, parents and 2 children from ten to fourteen years of age; one goes to school. Live in a tenement of 5 rooms, in a good locality, with pleasant surroundings. The apartments are well furnished, carpeted and kept very clean. Family dresses well. With the assistance of the son, can make enough to support family. Work about nine months in the year. Impossible to save money.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake, coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pie and tea.
Supper. Bread, butter, sauce or fruit, cheese, cake, tea.

Cost of Living,				\$738	
Rent,	\$120 00	Fish,	\$10 40	Dry goods,	\$27 60
Fuel,	49 50	Milk,	17 00	Books and papers,	12 00
Groceries,	216 33	Boots and shoes,	12 00	Societies,	8 00
Meat,	99 62	Clothing,	91 00	Sundries,	74 06

No. 87.

SHOEMAKER.

American.

EARNINGS of father, \$430

CONDITION.—Family numbers 4, parents and 2 children of six and eleven years of age; both go to school. Have a tenement of 4 rooms, situated in good neighborhood, with pleasant surroundings; small garden attached. The house is well furnished and the parlor carpeted. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, what was left from dinner, and coffee.*Dinner.* Bread, butter, meat, potatoes, pie and tea.*Supper.* Bread, butter, sometimes fish, and tea.

COST OF LIVING, \$430

Rent,	\$100 00	Milk,	\$15 21	Societies,	\$6 00
Fuel,	42 75	Boots and shoes,	8 00	Religion,	12 00
Groceries,	264 39	Clothing,	43 45	Sundries,	10 30
Meat,	83 48	Dry goods,	22 00		
Fish,	4 92	Papers,	7 50		

No. 88.

SHOEMAKER.

English.

EARNINGS of father, \$561

daughter, aged 16, 256

son, aged 14, 219

— \$1,036

CONDITION.—Family numbers 6, parents and 4 children from five to sixteen years of age; two go to school. Occupy a tenement of 5 rooms, in a good neighborhood, with healthy surroundings. House is well furnished and parlor carpeted. Have a sewing-machine. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, gingerbread, coffee.*Dinner.* Bread, meat, potatoes, vegetables, pickles, pie or pudding, tea.*Supper.* Bread, butter, cheese, cake, tea. Baked beans Saturday night.

COST OF LIVING, \$1,000 45

Rent,	\$200 00	Milk,	\$40 10	Books and papers,	\$23 00
Fuel,	56 00	Boots and shoes,	14 00	Societies,	10 00
Groceries,	433 21	Clothing,	87 50	Sundries,	36 30
Meat,	118 64	Dry goods,	41 80		

No. 89.

SHOEMAKER.

English.

EARNINGS of father, \$496

son, aged 14, 221

— \$717

CONDITION.—Family numbers 5, parents and 3 children from two to fourteen years of age; one goes to school. Live in a tenement of 5 rooms, situated in a clean and healthy locality, with ample yard-room. The apartments are well furnished and parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, pie and coffee.*Dinner.* Bread, butter, meat, potatoes, vegetables, pudding.*Supper.* Bread, butter, cheese, cake and tea.

COST OF LIVING, \$717

Rent,	\$132 00	Milk,	\$15 63	Papers,	\$6 00
Fuel,	47 00	Boots and shoes,	12 00	Societies,	10 00
Groceries,	309 99	Clothing,	46 00	Sundries,	21 38
Meat,	96 00	Dry goods,	21 00		

No. 90.	SHOEMAKER.	English.
EARNINGS of father,		\$428
at other work,		120
of daughter, aged 15,		188
		<hr/> \$736

CONDITION.—Family numbers 5, parents and 3 children from six to fifteen years of age; two go to school. Have a tenement of 6 rooms, very pleasantly situated and with good surroundings. The house is well furnished and the parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, cold meat, warmed potatoes, gingerbread and tea.
Dinner. Brown bread, butter, meat, potatoes, vegetables, pickles, pudding or pie, and tea.
Supper. Bread, butter, cheese or fish, cake, tea.

COST OF LIVING,					\$716
Rent,	\$132 00	Fish,	\$10 00	Dry goods,	\$24 00
Fuel,	51 00	Milk,	12 42	Religion,	12 00
Groceries,	296 54	Boots and shoes,	11 00	Papers,	6 00
Meat,	81 79	Clothing,	53 00	Sundries,	26 25

No. 91.	SHOEMAKER.	English.
EARNINGS of father,		\$542
daughter, aged 16,		233
son, aged 14,		179
		<hr/> \$1,004

CONDITION.—Family numbers 6, parents and 4 children from five to sixteen years of age; two go to school. Have a tenement of 5 rooms, well situated and with good surroundings. The rooms are well furnished and the parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, gingerbread and tea.
Dinner. Bread, butter, meat, potatoes, vegetables, pudding or pie.
Supper. Bread, butter, fish or cheese, and tea.

COST OF LIVING,					\$974 28
Rent,	\$132 60	Milk,	\$36 90	Societies,	\$8 00
Fuel,	53 00	Boots and shoes,	14 00	Religion,	16 00
Groceries,	429 37	Clothing,	80 60	Sundries,	19 36
Meat,	122 80	Dry goods,	31 50		
Fish,	9 00	Books and papers,	21 75		

No. 92.	SHOEMAKER.	French.
EARNINGS of father,		\$396

CONDITION.—Family numbers 6, parents and 4 children from one to nine years of age; two go to school. Live in a crowded tenement of 3 rooms, situated in a very unhealthy locality, in the midst of filth and pollution. On outside of building is a sink-conductor, badly out of repair, and the sink-water, almost black, runs down the clapboards, causing an offensive stench which can be smelled at a great distance. The inside of house is on a par with the surroundings; it is poorly furnished, and seems the abode of poverty. Children pale-looking, sickly, and wretchedly kept. Father earns from \$12 to \$15 per week when he has work; but, on account of sickness and dullness of trade, finds it impossible to keep out of debt and live; sees no hope for betterment of condition until children are old enough to work. Family dresses miserably.

FOOD.—*Breakfast.* Bread, butter, sometimes salt fish or pork, coffee.
Dinner. Bread, meat three days per week, salt fish or pork the remainder, potatoes, sometimes pie, water.
Supper. Bread, sometimes brown bread or oatmeal bread, butter, tea, occasionally gingerbread. Cannot afford luxuries.

COST OF LIVING,					\$483 40
Rent,	\$96 00	Fish,	\$18 00	Sickness,	\$19 00
Fuel,	30 50	Milk,	12 00	Sundries,	11 50
Groceries,	244 90	Clothing, shoes and			
Meat,	23 00	dry goods,	28 50		

No. 93.	SHOEMAKER.	French.
EARNINGS of father,		\$540
daughter, aged 13½,		116
son, aged 16,		308
son, aged 12,		212
		<hr/> \$1,176

CONDITION.—Family numbers 8, parents and 6 children from three to fifteen years of age; two go to school. Occupy a good tenement of 6 rooms, with neat and healthy surroundings. The bed-rooms and parlor are carpeted. Own a piano, sewing and other labor-saving machines. Family dresses well and attends church. The father worked 8 months and earned from \$12 to \$18 per week. The family has done well since the children commenced to work; before then they incurred many debts, and it was two years before they were able to liquidate them. Had to live in a poor neighborhood then, with few comforts, and the consequences were that sickness prevailed in the family. The present home has better sanitary arrangement, food and clothing. The children who work attend school three months in the year. Has money in savings bank, but declines to tell how much.

FOOD.—*Breakfast.* Bread, butter, eggs, ham or fish and potatoes, pie and cake, coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, sometimes fish, pickles, pudding and tea.
Supper. Bread, butter, cold meat, salad, cheese, sauce, cake, tea. Sometimes soup for dinner, occasionally baked beans, or anything for a change.

COST OF LIVING,				\$1,053 88	
Rent,	\$218 00	Fish,	\$32 90	Dry goods,	\$41 00
Fuel,	54 50	Clothing,	76 00	Religion,	25 00
Groceries,	428 80	Boots and shoes,	26 00	Sundries,	30 00
Meat,	84 00	Milk,	28 00		

No. 94.	SHOEMAKER.	Irish.
EARNINGS of father,		\$493
son, aged 16,		300
		<hr/> \$793

CONDITION.—Family numbers 5, parents and 3 children from six to sixteen years of age; two go to school. Live in a tenement of 4 rooms, in a pleasant and healthy locality. The apartments are well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, remains left from dinner, coffee.
Dinner. Bread, meat, potatoes, sometimes cabbage.
Supper. Bread, butter, sometimes gingerbread, and tea.

COST OF LIVING,				\$788	
Rent,	\$144 00	Fish,	\$8 12	Dry goods,	\$23 80
Fuel,	41 76	Milk,	14 23	Papers,	8 00
Groceries,	380 21	Boots and shoes,	9 00	Sundries,	40 00
Meat,	88 30	Clothing,	56 00		

No. 95.	SHOEMAKER.	Irish.
EARNINGS of father,		\$493
son, aged 14,		299
		<hr/> \$792

CONDITION.—Family numbers 5, parents and 3 children from seven to fourteen years of age; two go to school. Have a tenement of 4 rooms, well situated, with pleasant and healthy surroundings. House is well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat, potatoes and tea.
Dinner. Bread, meat, potatoes, cabbage, and sometimes pie.
Supper. Bread, butter, cheese or fish, and tea.

COST OF LIVING,				\$731 88	
Rent,	\$100 00	Fish,	\$12 30	Dry goods,	\$18 00
Fuel,	50 00	Milk,	12 80	Papers,	8 70
Groceries,	335 56	Boots and shoes,	11 50	Sundries,	33 88
Meat,	99 18	Clothing,	50 25		

No. 96.	TANNER.	<i>Irish.</i>
EARNINGS of father,		\$487
son, aged 13,		169
		<hr/> \$656

CONDITION.—Family numbers 5, parents and 3 children from one to thirteen years of age; one goes to school. Live in a tenement of 4 rooms, in a clean and healthy locality. The apartments are moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, remains left from dinner, and coffee.
Dinner. Bread, meat or fish, potatoes.
Supper. Bread, butter, gingerbread and tea.

COST OF LIVING,			\$650
Rent, \$26 00	Fish, \$11 22	Dry goods,	\$14 00
Fuel, 30 00	Milk, 12 48	Papers,	8 00
Groceries, 299 13	Boots and shoes, 18 00	Societies,	6 00
Meat, 83 29	Clothing, 49 50	Sundries,	13 88

Skilled.	METAL-WORKERS.	61 Families.
No. 97.	BLACKSMITH.	<i>American.</i>

EARNINGS of father,	\$797 50
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CONDITION.—Family numbers 5, parents and 3 children from three to ten years of age; two go to school. Have a tenement of 5 rooms, well situated, and with clean and healthy surroundings, situated about a mile from the shop. The rooms are well furnished, and the parlor carpeted. Have a sewing-machine. Family dresses well and is in good health, or the expenses would have to be curtailed; cannot save money and live as they should; takes all the earnings to keep the family.

FOOD.—*Breakfast.* Bread, butter, eggs or meat, potatoes, cake and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, cheese, pudding or pie and tea.
Supper. Bread, butter, cold meat, sauce, pie or cake, tea. Beans once per week.

COST OF LIVING,			\$797 50
Rent, \$180 00	Milk, \$14 75	Books and papers,	\$6 00
Fuel, 44 50	Boots and shoes, 21 75	Sundries,	41 00
Groceries, 312 90	Clothing, 53 00		
Meat, 91 60	Dry goods, 33 00		

No. 98.	BLACKSMITH.	<i>English.</i>
EARNINGS of father,		\$760

CONDITION.—Family numbers 4, parents and 2 children of two and four years of age. Occupy a tenement of 4 rooms in a good locality, with agreeable surroundings. House is well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, eggs or the remains of dinner warmed, gingerbread, coffee.
Dinner. Meat, potatoes, vegetables in season, pudding or pie, coffee.
Supper. Bread, butter, cheese or fish, cake or tea

COST OF LIVING,			\$760
Rent, \$132 00	Fish, \$3 00	Dry goods,	\$15 00
Fuel, 30 80	Milk, 14 90	Papers,	9 00
Groceries, 273 94	Boots and shoes, 19 45	Societies,	12 00
Meat, 87 43	Clothing, 90 00	Sundries,	58 48

No. 99.	BOILER-MAKER.		American.
EARNINGS of father, \$700			
CONDITION.—Family numbers 3, parents and 1 child four years of age. Live in a tenement of 4 rooms, well situated, with good surroundings. The apartments are well furnished and carpeted. Own a sewing-machine. Family dresses well and are very intelligent and respectable.			
FOOD.— <i>Breakfast.</i> Hot biscuits, brown bread, butter, meat or eggs, cake and tea.			
<i>Dinner.</i> Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, and tea.			
<i>Supper.</i> Bread, butter, sauce, cheese, cake, pie, tea.			
COST OF LIVING, \$700			
Rent, \$168 00	Milk, \$17 80	Books and papers, . .	\$12 00
Fuel, 36 75	Boots and shoes, . .	Societies,	9 00
Groceries, . . . 236 40	Clothing,	Sundries,	38 10
Meat, 69 35	Dry goods,		

No. 100.	CUTLER.		English.
EARNINGS of father,			\$600
CONDITION.—Family numbers 4, parents and 2 children of two and four years of age. Have a tenement of 4 rooms, with pleasant surroundings. House is well furnished. Family dresses well.			
FOOD.— <i>Breakfast.</i> Bread, butter, meat, cake and coffee.			
	<i>Dinner.</i> Meat, potatoes, vegetables, bread, pudding or pie.		
	<i>Supper.</i> Bread, butter, cold meat or fish, tea.		
COST OF LIVING,			\$500
Rent, \$72 00	Fish, \$8 00	Dry goods,	\$28 70
Fuel, 39 40	Milk, 18 92	Papers,	6 00
Groceries, . . . 199 23	Boots and shoes, . .	Sundries,	40 05
Meat, 81 80	Clothing,		

No. 101.	CUTLER.		English.
EARNINGS of father,			\$600
CONDITION.—Family numbers 4, parents and 2 children of three and eight years of age; one goes to school. Occupy a tenement of 4 rooms, well situated, with good and pleasant surroundings. The house is well furnished. Family dresses well.			
FOOD.— <i>Breakfast.</i> Bread, butter, meat or eggs, gingerbread, tea.			
	<i>Dinner.</i> Brown bread, butter, meat, potatoes, vegetables, pudding or pie, tea.		
	<i>Supper.</i> Bread, butter, sauce, cake, tea.		
COST OF LIVING,			\$614
Rent, \$84 00	Fish,	\$6 00	Dry goods, \$15 00
Fuel, 47 50	Milk,	23 86	Papers, 9 00
Groceries, . . . 219 89	Boots and shoes, . .	19 50	Sundries, 21 05
Meat, 85 30	Clothing,	71 00	

No. 102.

CUTLER.

German.

EARNINGS of father, \$640

CONDITION.—Family numbers 5, parents and 3 children from one to six years of age; one goes to school. Live in a tenement of 5 rooms; locality and surroundings very good. The apartments are moderately well furnished. Family dresses well and is free from sickness.

FOOD.—*Breakfast.* Bread, butter, meat and coffee.
Dinner. Bread, meat, potatoes, vegetables, pie.
Supper. Bread, butter, fish or cheese, tea.

COST OF LIVING, \$620

Rent, . . . \$78 00	Fish, . . . \$12 40	Dry goods, . . . \$18 00
Fuel, . . . 84 50	Milk, . . . 14 18	Papers, . . . 9 00
Groceries, . . . 261 09	Boots and shoes, . . . 20 00	Societies, . . . 7 00
Meat, . . . 97 83	Clothing, . . . 53 40	Sundries, . . . 25 12

No. 103.

CUTLER.

German.

EARNINGS of father, \$624
 son, aged 15, 290
 \$914

CONDITION.—Family numbers 6, parents and 4 children from two to fifteen years of age; one goes to school. Have a tenement of 5 rooms, with pleasant and agreeable surroundings. House well furnished and rooms tastefully arranged; parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, sometimes potatoes, cake and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pudding or pie.
Supper. Bread, butter, cold meat or cheese, cake and tea.

COST OF LIVING, \$873

Rent, . . . \$106 00	Milk, . . . \$31 90	Societies, . . . \$9 00
Fuel, . . . 56 70	Boots and shoes, . . . 40 50	Religion, . . . 16 00
Groceries, . . . 323 40	Clothing, . . . 87 00	Sundries, . . . 25 00
Meat, . . . 122 00	Dry goods, . . . 36 50	
Fish, . . . 6 00	Books and papers, . . . 12 00	

No. 104.

ENGINE-BUILDER.

English.

EARNINGS of father, \$851 50

CONDITION.—Family numbers 5, parents and 3 children from three to fourteen years of age; two go to school. Occupy a tenement of 5 rooms, up stairs, in a healthy and pleasant neighborhood, with good and neat surroundings, situated one mile from work. The house is well furnished, with rooms carpeted and kept in perfect order. Have a good library, piano, sewing and wringing machines. Family dresses well and appears very respectable. Had no sickness for five years and can save money. The father likes his business and endeavors to make his family comfortable.

FOOD.—*Breakfast.* Bread, butter, the remains of dinner warmed, sometimes fresh meat or eggs, cake or pie, tea.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, fruit in season.
Supper. Bread and butter, sometimes cold meat, cheese or fish, sauce and tea.

COST OF LIVING, \$775

Rent, . . . \$168 00	Fish, . . . \$6 25	Dry goods, . . . \$26 00
Fuel, . . . 86 50	Milk, . . . 18 24	Books and papers, . . . 12 00
Groceries, . . . 261 95	Boots and shoes, . . . 34 37	Societies, . . . 6 00
Meat, . . . 83 45	Clothing, . . . 77 95	Sundries, . . . 44 29

No. 106.	IRON-MOULDER.		American.		
EARNINGS of father,			\$747		
CONDITION.—Family numbers 4, parents and 2 children from two to six years of age; one goes to school. Live in a tenement of 4 rooms, about three-quarters of a mile from shop, in a clean and healthy locality, with good surroundings. The apartments are well furnished and rooms carpeted. Family dresses well, but cannot save money.					
FOOD.— <i>Breakfast.</i> Bread, butter, fresh meat, warmed potatoes or eggs, cake, coffee.					
<i>Dinner.</i> Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, tea.					
<i>Supper.</i> Bread, butter, cold meat, cheese, pie and tea.					
COST OF LIVING,			\$747		
Rent,	\$168 00	Fish,	\$9 00	Dry goods,	\$23 00
Fuel,	41 00	Milk,	14 20	Papers,	5 00
Groceries,	250 70	Boots and shoes,	25 00	Societies,	7 00
Meat,	82 40	Clothing,	60 00	Sundries,	62 70

No. 106.	IRON-MOULDER.	American.		
EARNINGS of father,		\$605		
son, aged 15,		254		
		<hr/> \$349		
CONDITION.—Family numbers 5, parents and 3 children from six to fifteen years of age; two go to school. Occupy a tenement of 6 rooms up stairs, in a poor locality, with unpleasant surroundings and little yard-room; there is no space in front of the house, as the door opens on the street. The parlor is carpeted and the house kept remarkably neat, considering the locality. Own a sewing-machine. Family dresses well and is healthy; have had no sickness for several years. Cannot save money, as it takes all to keep family comfortable. Subscribe for one daily and one weekly paper, also "Scientific American" and "Atlantic Monthly."				
FOOD.— <i>Breakfast.</i> Hot biscuit, brown bread, butter, graham bread, meat or eggs, cake, tea.				
<i>Dinner.</i>	Bread, (brown or white), butter, meat, potatoes, vegetables, pickles, pudding or pie, cake, tea.			
<i>Supper.</i>	Bread, butter, cold meat, sauce, pie, cake, tea. Have fish once a week, and baked beans Saturday night and Sunday morning.			
COST OF LIVING,		\$349		
Rent,	\$192 00	Fish, \$13 00	Dry goods, \$29 75	
Fuel,	49 70	Milk,	26 50	Books and papers, 21 00
Groceries,	329 62	Boots and shoes,	37 25	Sundries, 38 43
Meat,	97 75	Clothing,	114 00	

No. 107.		IRON-MOULDER.		Irish.	
EARNINGS of father,				\$712	
son, aged 16,				362	
son, aged 15,				196	
				\$1,270	

CONDITION.—Family numbers 6, parents and 4 children from four to sixteen years of age; one goes to school. Live a tenement of 6 rooms, about a mile from shop, in a very pleasant and healthy neighborhood. A garden surrounds the house, kept in good order and tastefully arranged; on the sides and front, flowers are planted, and vegetables are raised in the rear. The apartments are well furnished and parlor carpeted. Have a sewing-machine. Family dresses well and attends church. Have some money in savings bank. Children all born in Massachusetts.

FOOD.— <i>Breakfast.</i>		Bread, butter, meat or fish, potatoes, pie and coffee.			
<i>Dinner.</i>		Bread, butter, meat, potatoes, vegetables, pickles, pudding and tea.			
<i>Supper.</i>		Bread, butter, cold meat, fish or cheese, sauce, cake or pie.			
COST OF LIVING,				\$1,070	
Rent,	\$200 00	Milk,	\$31 20	Religion,	\$25 00
Fuel,	51 00	Boots and shoes,	28 60	Books and papers,	10 00
Groceries,	368 54	Clothing,	130 00	Sundries,	62 36
Meat,	81 90	Dry goods,	36 00		
Fish,	16 00	Carpet,	29 50		

No. 108.

IRON-ROLLER.

American.

EARNINGS of father, \$790

CONDITION.—Family numbers 5, parents and 3 children from four to twelve years of age; two go to school. Live in a tenement of 5 rooms, pleasantly situated, with good surroundings. Have a sewing-machine. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, gingerbread, coffee.
Dinner. Bread, meat, potatoes, vegetables, pickles, pie.
Supper. Bread, butter, cake and tea.

COST OF LIVING, \$790

Rent, \$120 00	Fish, \$9 76	Dry goods, \$21 90
Fuel, 49 80	Milk, 23 62	Papers, 14 50
Groceries, 328 62	Boots and shoes, 26 80	Societies, 10 00
Meat, 112 49	Clothing, 60 00	Sundries, 13 51

No. 109.

IRON-ROLLER.

English.

EARNINGS of father, \$980
 son, aged 17, 400
 ————— \$1,380

CONDITION.—Family numbers 7, parents and 5 children from six to seventeen years of age; four go to school. Have a tenement of 6 rooms, well situated and with good surroundings, in a healthy, quiet neighborhood, with excellent sanitary arrangements. The rooms are well furnished and all carpeted except the kitchen. Have sewing and other labor-saving machines. Family dresses well and children go to church. Have had no sickness for upwards of five years. The father believes that good living and pleasant homes are a preventive of disease.

FOOD.—*Breakfast.* Bread, butter, meat, or ham and eggs, or boiled eggs, pie or cake, tea and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pudding and pie, water or beer.
Supper. Bread, butter, cold meat, sometimes fish, cheese, pie and tea. Fruit, either fresh or canned, every day.

COST OF LIVING, \$1,260

Rent, \$200 00	Milk, \$42 00	Societies, \$9 00
Fuel, 57 50	Boots and shoes, 49 75	Books and papers, 17 00
Groceries, 436 22	Clothing, 182 00	Sundries, 68 93
Meat, 139 60	Dry goods, 31 00	
Fish, 15 00	Religion, 12 00	

No. 110.

IRON-ROLLER.

English.

EARNINGS of father, \$800

CONDITION.—Family numbers 4, parents and 2 children of one and six years of age; one goes to school. Occupy a tenement of 6 rooms, up stairs, in a good locality, with pleasant and healthy surroundings, but rather inconvenient, as the wood and coal have to be carried up stairs; yet it is as good as can be obtained for the money in Taunton. The house is well furnished, with parlor carpeted, and neatly taken care of. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, fresh steak, potatoes or ham and eggs, cake, coffee.
Dinner. Meat of some kind, potatoes, vegetables, pickles, bread, butter, pudding or pie.
Supper. Bread, butter, cold meat or cheese, sauce, pie, tea.

COST OF LIVING, \$800

Rent, \$180 00	Milk, \$21 00	Papers, \$9 00
Fuel, 39 80	Boots and shoes, 20 40	Societies, 6 00
Groceries, 321 70	Clothing, 62 00	Sundries, 29 00
Meat, 89 60	Dry goods, 21 50	

No. 111.

IRON-ROLLER.

Irish.

EARNINGS of father, \$200

CONDITION.—Family numbers 4, parents and 2 children of two and four years of age. Have a tenement of 5 rooms, well situated, with pleasant surroundings. The house is well furnished. Family dresses well. The father belongs to two benevolent societies and has money in the savings bank.

FOOD.—*Breakfast.* Bread, butter, meat, fried potatoes, pie and coffee.*Dinner.* Bread, butter, meat, potatoes, vegetables, pie or pudding.*Supper.* Bread, butter, cold meat or fish, cheese, crackers and tea.

COST OF LIVING, \$250

Rent,	\$168 00	Milk,	\$27 42	Religion,	\$20 00
Fuel,	46 00	Boots and shoes,	26 70	Books and papers,	6 00
Groceries,	306 87	Clothing,	74 00	Sundries,	40 18
Meat,	93 22	Dry goods,	19 00		
Fish,	13 60	Societies,	9 00		

No. 112.

IRON-WORKER.

American.

EARNINGS of father, \$630
 at other work, 140
 ————— \$770

CONDITION.—Family numbers 4, parents and 2 children of seven and ten years of age; both go to school. Have a tenement of 5 rooms, well situated and with good surroundings. The rooms are well furnished and the parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat, cake and coffee.*Dinner.* Meat, potatoes, sometimes vegetables, bread, pie.*Supper.* Bread, butter, cheese or sauce, tea.

COST OF LIVING, \$746 38

Rent,	\$120 00	Fish,	\$7 90	Dry goods,	\$14 20
Fuel,	46 50	Milk,	16 80	Papers,	12 00
Groceries,	309 47	Boots and shoes,	24 00	Societies,	6 00
Meat,	102 31	Clothing,	53 60	Sundries,	31 60

No. 113.

JEWELLER.

American.

EARNINGS of father, \$300

CONDITION.—Family numbers 5, parents and 3 children from four to thirteen years of age; two go to school. Occupy a tenement of 5 rooms in a good locality, with agreeable surroundings. House is well furnished, with the parlor carpeted. Own a sewing and other labor-saving machines. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread (graham and white), butter, eggs, gingerbread, coffee.*Dinner.* Meat, potatoes bread, butter, vegetables, pudding, tea.*Supper.* Bread, butter, sauce, cheese, cake and tea.

COST OF LIVING, \$300

Rent,	\$132 00	Fish,	\$6 00	Dry goods,	\$30 00
Fuel,	50 00	Milk,	21 90	Religion,	12 00
Groceries,	360 87	Boots and shoes,	27 50	Papers,	6 00
Meat,	76 60	Clothing,	43 00	Sundries,	28 18

No. 114.

JEWELLER.

American.

EARNINGS of father, \$350

CONDITION.—Family numbers 4, parents and 2 children from three to seven years of age; one goes to school. Live in a tenement of 5 rooms, well situated in a pleasant neighborhood, with good surroundings. The apartments are well furnished and rooms carpeted. Family dresses well and are very intelligent.

FOOD.—*Breakfast.* Bread, butter, meat, eggs or potatoes, cake and coffee.*Dinner.* Brown bread, butter, meat, potatoes, vegetables, pickles, pie and tea.*Supper.* Bread, butter, cheese or sauce, cake, tea. Baked beans Sunday morning.

COST OF LIVING, \$817

Rent, . . . \$152 00 Fish, . . . \$12 00 Dry goods, . . \$18 00

Fuel, . . . 61 00 Milk, . . . 24 34 Books and papers, . 14 00

Groceries, . . 326 06 Boots and shoes, . 23 75 Societies, . . 8 00

Meat, . . . 83 20 Clothing, . . . 61 00 Sundries, . . . 43 65

No. 115.

MACHINIST.

American.

EARNINGS of father, \$720

CONDITION.—Family numbers 4, parents and 2 children of six and eleven years of age; both go to school. Have a tenement of 5 rooms, well situated, and with good surroundings. The house is well furnished. Family dresses well.

FOOD.—*Breakfast.* Hot biscuits, bread, butter, meat, cake or pie, and coffee.*Dinner.* Bread, butter, meat, potatoes, vegetables, pickles, pudding or pie, and tea.*Supper.* Bread, butter, cheese or fruit, gingerbread and tea. Baked beans on Saturday night.

COST OF LIVING, \$682

Rent, . . . \$96 00 Fish, . . . \$10 00 Dry goods, . . \$16 00

Fuel, . . . 41 00 Milk, . . . 25 12 Papers, . . . 8 00

Groceries, . . 219 99 Boots and shoes, . 21 50 Societies, . . 9 00

Meat, . . . 106 25 Clothing, . . . 30 00 Sundries, . . . 50 14

No. 116.

MACHINIST.

American.

EARNINGS of father, \$700

CONDITION.—Family numbers 5, parents and 3 children from two to nine years of age; two go to school. Occupy a tenement of 6 rooms, pleasantly situated in a good neighborhood. The house is well furnished, with rooms carpeted. Have a sewing and other labor-saving machines. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread (graham and white), butter, cold meat or eggs, cake, coffee.*Dinner.* Brown bread, butter, meat, potatoes, vegetables, pickles, pie, tea.*Supper.* Bread, butter, cheese, cake, tea.

COST OF LIVING, \$700

Rent, . . . \$76 00 Fish, . . . \$9 00 Dry goods, . . \$14 00

Fuel, . . . 56 00 Milk, . . . 14 30 Papers, . . . 6 00

Groceries, . . 324 90 Boots and shoes, . 27 00 Religion, . . . 12 00

Meat, . . . 91 70 Clothing, . . . 40 00 Sundries, . . . 30 10

No. 117.

MACHINIST.

American.

EARNINGS of father, \$683

CONDITION.—Family numbers 4, parents and 2 children from three and seven years of age; one goes to school. Live in a tenement of 6 rooms, in a good locality with pleasant surroundings. The apartments are well furnished and parlor carpeted. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, cold meat, potatoes, coffee.*Dinner.* Bread, meat, potatoes, vegetables, pie and tea.*Supper.* Bread, butter, cheese or fish, tea.

COST OF LIVING, \$683

Rent,	\$96 00	Fish,	\$8 28	Dry goods,	\$12 00
Fuel,	48 60	Milk,	13 24	Papers,	8 00
Groceries,	327 92	Boots and shoes,	20 37	Religion,	8 00
Meat,	82 13	Clothing,	49 00	Sundries,	14 46

No. 118.

MACHINIST.

American.

EARNINGS of father, \$800

CONDITION.—Family numbers 3, parents and 1 child eight years of age, who goes to school. Have a tenement of 5 rooms, situated in a good neighborhood with clean surroundings. The house is well furnished and the rooms carpeted. Have a piano. Family dresses well and attends church.

FOOD.—*Breakfast.* Graham bread, hot biscuit, butter, meat, gingerbread and coffee.*Dinner.* Meat, potatoes, vegetables, bread, pie and tea.*Supper.* Bread, butter, sauce, cake and tea.

COST OF LIVING, \$773

Rent,	\$240 00	Milk,	\$17 90	Papers,	\$12 00
Fuel,	39 50	Boots and shoes,	19 50	Religion,	20 00
Groceries,	231 46	Clothing,	58 00	Sundries,	16 41
Meat,	72 56	Dry goods,	25 00		
Fish,	4 67	Horse-cars,	16 00		

No. 119.

MACHINIST.

American.

EARNINGS of father, \$730

CONDITION.—Family numbers 4, parents and 2 children of six and nine years of age; both go to school. Occupy a tenement of 4 rooms in a nice locality, with neat and clean surroundings, also a small garden attached. The house is well furnished with the parlor carpeted. Family dresses well and attends church. Have money in savings bank, saved several years ago. Have to be economical to support the family now.

FOOD.—*Breakfast.* Hot biscuit, butter, sometimes meat or the remains of dinner, cake and tea.*Dinner.* Meat, potatoes, vegetables in season, bread and butter, pickles, pie, tea.*Supper.* Bread, butter, sauce or fruit, sometimes fish, cake or pie, tea.

COST OF LIVING, \$706

Rent,	\$144 00	Fish,	\$13 00	Dry goods,	\$13 00
Fuel,	30 00	Milk,	14 30	Religion,	13 00
Groceries,	249 61	Boots and shoes,	29 75	Books and papers,	6 00
Meat,	67 90	Clothing,	73 00	Sundries,	35 44

No. 120.

MACHINIST.

American.

EARNINGS of father, \$820

CONDITION.—Family numbers 4, parents and 2 children of six and twelve years of age; two go to school. Live in a tenement of 5 rooms in a pleasant and healthy locality, with good surroundings. The apartments are well furnished and parlor carpeted. Own a sewing and a wringing machine. Family dresses well. The father thanks the officers of the bureau for this investigation, and believes that the attendance at grog-shops would be less frequent if the homes of the operatives were made more attractive and comfortable.

FOOD.—*Breakfast.* Hot biscuits, graham bread, beefsteak or eggs, cake and tea.*Dinner.* Bread, butter, meat, potatoes, vegetables, pickles, pie, fruit in season, tea.*Supper.* Bread, butter, cold meat or fish, sauce, cake and tea.

COST OF LIVING, \$778

Rent, \$120 00	Milk, \$31 80	Societies, \$12 00
Fuel, 62 00	Boots and shoes, 27 50	Religion, 14 00
Groceries, 254 70	Clothing, 72 00	Sundries, 21 13
Meat, 101 87	Dry goods, 43 80	
Fish, 9 20	Papers, 8 00	

No. 121.

MACHINIST.

American.

EARNINGS of father, \$720

CONDITION.—Family numbers 5, parents and 3 children from three to twelve years of age; two go to school. Have a tenement of 5 rooms, situated in good neighborhood with pleasant surroundings. The house is well furnished and the parlor carpeted. Have a piano and a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, cold corned meat or fish, gingerbread and coffee.*Dinner.* Bread, butter, meat, potatoes, vegetables and pie.*Supper.* Bread, butter, cheese and tea.

COST OF LIVING, \$720

Rent, \$120 00	Fish, \$8 20	Dry goods, \$18 00
Fuel, 47 50	Milk, 14 36	Papers, 12 00
Groceries, 239 34	Boots and shoes, 20 00	Religion, 16 00
Meat, 96 92	Clothing, 61 00	Sundries, 16 68

No. 122.

MACHINIST.

American.

EARNINGS of father, \$840

CONDITION.—Family numbers 4, parents and 2 children of one and four years of age. Occupy a tenement of 5 rooms, situated about three-quarters of a mile from shop, in a good neighborhood with pleasant surroundings. House is well furnished, with parlor carpeted. Have a sewing-machine. Family dresses well and attends church. Buy all goods for cash.

FOOD.—*Breakfast.* Brown bread, hot biscuit, butter, meat, cake or doughnuts, coffee.*Dinner.* Bread, butter, meat, potatoes, vegetables, sometimes fruit, pie, tea.*Supper.* Bread, butter, sauce or fish, gingerbread, tea.

COST OF LIVING, \$820

Rent, \$168 00	Fish, \$12 00	Dry goods, \$18 00
Fuel, 49 00	Milk, 15 64	Papers, 8 00
Groceries, 200 61	Boots and shoes, 20 40	Religion, 14 00
Meat, 92 60	Clothing, 79 00	Sundries, 52 75

No. 123.	MACHINIST.		American.		
EARNINGS of father,			\$738		
CONDITION.—Family numbers 3, parents and 1 child of seven years of age, who goes to school. Live in a tenement of 5 rooms, in a very pleasant locality, with good surroundings. The apartments are well furnished and rooms carpeted. Own a piano, also a sewing-machine. Family dresses well and attends church.					
FOOD.— <i>Breakfast.</i> Bread, butter, meat or eggs, doughnuts, coffee.					
<i>Dinner.</i> Bread, butter, meat, potatoes, vegetables, pie and tea.					
<i>Supper.</i> Bread, butter, cheese, cake and tea.					
COST OF LIVING,			\$704 28		
Rent,	\$150 00	Milk,	\$19 15	Societies,	\$10 00
Fuel,	44 70	Boots and shoes,	26 85	Religion,	12 00
Groceries,	230 16	Clothing,	48 00	Sundries,	19 75
Meat,	89 81	Dry goods,	30 00		
Fish,	12 84	Books and papers,	11 50		

No. 124.	MACHINIST.		American.		
EARNINGS of father,				\$778	
CONDITION.—Family numbers 5, parents and 3 children from one to eleven years of age; two go to school. Have a tenement of 5 rooms, well situated and with good surroundings; there is a small garden attached, which is kept in good order and is very attractive. The rooms are well furnished and the parlor carpeted. Have a cottage organ. Family dresses well.					
FOOD.— <i>Breakfast.</i>	Bread, butter, cold meat, warmed potatoes, gingerbread and coffee.				
<i>Dinner.</i>	Meat, potatoes, sometimes vegetables, pudding or pie.				
<i>Supper.</i>	Bread, butter, cheese, cake and tea. Beans Sunday morning.				
COST OF LIVING,				\$778	
Rent,	\$182 00	Milk,	\$28 74	Societies,	\$6 00
Fuel,	48 00	Boots and shoes,	26 50	Religion,	12 00
Groceries,	279 29	Clothing,	67 00	Sundries,	25 87
Meat,	99 60	Dry goods,	31 60		
Fish,	10 40	Papers,	11 00		

No. 125.	MACHINIST.				American.
EARNINGS of father,					\$738
CONDITION.—Family numbers 4, parents and 2 children of three and seven years of age; one goes to school. Occupy a tenement of 5 rooms, with neat and healthy surroundings. The house is well furnished. Own a piano. Family dresses well.					
FOOD.— <i>Breakfast.</i>		Bread and butter, meat, cake, coffee.			
<i>Dinner.</i>		Meat, potatoes, vegetables, bread, pie and tea.			
<i>Supper.</i>		Bread, butter, sauce, gingerbread, tea.			
COST OF LIVING,					\$707 87
Rent,	\$120 00	Milk,	\$16 44	Papers,	\$14 80
Fuel,	49 75	Boots and shoes,	30 00	Societies,	9 00
Groceries,	271 43	Clothing,	52 00	Sundries,	23 08
Meat,	101 88	Dry goods,	21 37		

No. 126.	MACHINIST.		American.		
EARNINGS of father,			\$700		
CONDITION.—Family numbers 3, parents and 1 child two years of age. Live in a tenement of 4 rooms in a pleasant neighborhood with good surroundings. The apartments are well furnished. Have sewing and other labor-saving machines. Family dresses well and attends church. Cannot save much money; takes about all the earnings to support the family.					
FOOD.— <i>Breakfast.</i>		Bread, brown bread, butter, meat or eggs, cake or pie, tea.			
<i>Dinner.</i>		Two kinds of bread, butter, meat, potatoes, vegetables in season, pickles, pie, sometimes pudding, tea.			
<i>Supper.</i>		Bread, butter, sauce, cheese or fish, cake, pie, tea. Baked beans Sunday morning.			
COST OF LIVING,			\$730		
Rent,	\$120 00	Fish,	\$9 15	Dry goods,	\$16 90
Fuel,	53 00	Milk,	14 20	Books and papers,	6 00
Groceries,	224 60	Boots and shoes,	26 00	Religion,	12 00
Meat,	87 95	Clothing,	102 00	Sundries,	58 20

No. 127.		MACHINIST.		American.	
EARNINGS of father,				\$675	
daughter, aged 15,				216	
son, aged 17,				360	
				<hr/> \$1,251	

CONDITION.—Family numbers 6, parents and 4 children from four to seventeen years of age; one only goes to school. Occupy 4 rooms in a large tenement block belonging to the corporation and inhabited by ten families; the surroundings are both unhealthy and unpleasant. Family dresses and lives well, but could not without the assistance of children; have to be economical, as it is. Cannot save money, as the surplus generally is expended for other things and comforts during the year.

FOOD. — <i>Breakfast.</i>		Bread, butter, meat, cake or pie, tea, coffee.			
<i>Dinner.</i>		Bread, butter, meat, potatoes, vegetables, pickles, pudding or pie, tea.			
<i>Supper.</i>		Bread, butter, cold meat, pie cake, tea.			
COST OF LIVING,				\$1,073 61	
Rent,	\$106 00	Meat,	\$180 25	Clothing,	\$108 00
Fuel,	68 00	Milk,	24 00	Dry goods,	27 50
Groceries,	486 86	Boots and shoes,	30 00	Sundries,	43 00

No. 128.	MACHINIST.	American.
EARNINGS of father,		\$770
CONDITION.—Family numbers 4, parents and 2 children of four and six years of age. Have a tenement of 4 rooms, well situated in a good neighborhood and with pleasant surroundings. House well furnished and the sitting-room carpeted. Have a cottage-organ and a good library, and are very intelligent. Family dresses well.		
FOOD.— <i>Breakfast.</i> Graham bread, hot biscuit, butter, meat or eggs, cake, tea and coffee.		
<i>Dinner.</i> Bread, butter, meat, potatoes, vegetables, pickles, pudding or pie, and tea. Occasionally fruit.		
<i>Supper.</i> Bread, butter, sauce, cheese or fish, pie or cake, and tea. Baked beans Sunday morning.		

COST OF LIVING,				\$716	
Rent,	\$108 00	Fish,	\$12 89	Dry goods,	\$32 25
Fuel,	43 00	Milk,	15 20	Books and papers,	26 00
Groceries,	229 99	Boots and shoes,	21 75	Societies,	12 00
Meat,	77 47	Clothing,	87 90	Sundries,	69 55

No. 129.	MACHINIST.	American.
EARNINGS of father,		\$668
daughter, aged 17,		364
		<hr/> \$1,032

CONDITION.—Family numbers 5, parents and 3 children from six to seventeen years of age; two go to school. Live in a tenement of 6 rooms, pleasantly situated, with good surroundings; also have plenty of yard-room. Cleanliness is very marked, both in the interior and exterior of house. The apartments are well furnished and rooms carpeted. Own a piano. Family dresses well and have some money in savings bank.

FOOD.—*Breakfast.* Bread, butter, remains left from dinner, pie and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie, tea.
Supper. Bread, butter, sauce or cheese, cake and tea.

COST OF LIVING,				\$947
Rent, \$120 00	Milk, \$18 85	Religion,		\$12 00
Fuel, 47 75	Boots and shoes, 39 00	Societies,		9 00
Groceries, 383 60	Clothing, 110 00	Sundries,		68 22
Meat, 74 90	Dry goods, 33 00			
Fish, 14 08	Books and papers, 16 00			

No. 130.	MACHINIST.	American.
EARNINGS of father,		\$820
son, aged 16,		290
		<hr/> \$910

CONDITION.—Family numbers 5, parents and 3 children from eight to sixteen years of age; two go to school. Occupy a tenement of 5 rooms in a good locality, with very good surroundings. Sanitary arrangements excellent. There is a small garden attached to the house. The rooms are well furnished and the parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat and the remains left from dinner, gingerbread, tea.
Dinner. Bread, butter, meat, potatoes, vegetables, pie, tea.
Supper. Bread, butter, cheese or fish, cake, tea.

COST OF LIVING,				\$300 22
Rent, \$168 00	Milk, \$24 44	Societies,		\$3 00
Fuel, 49 50	Boots and shoes, 30 00	Religion,		12 00
Groceries, 365 27	Clothing, 62 00	Sundries,		21 00
Meat, 99 81	Dry goods, 29 60			
Fish, 10 60	Papers, 10 00			

No. 131.	MACHINIST.	American.
EARNINGS of father,		\$662
son, aged 17,		320
		<hr/> \$982

CONDITION.—Family numbers 5, parents and 3 children of eight, eleven and seventeen years of age; two go to school. Have a tenement of 6 rooms, pleasantly situated in a healthy neighborhood, with a small garden attached. House well furnished; parlor and bed-rooms carpeted; have ornaments and pictures in almost every room. Have a piano and sewing-machine. The father takes great pride and spends considerable of his spare time in making things neat and comfortable around his home. Has to be economical to live as he desires; cannot keep his family with what he considers the necessary comforts out of his own earnings. Family enjoys good health; has had no sickness for two years.

FOOD.—*Breakfast.* Hot biscuits, brown bread, butter, meat, either fresh or corned, cake or pie, tea, coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, cheese, cake or pie and tea.
Supper. Bread, butter, sauce, sometimes fish, cheese, sometimes baked beans, cake, doughnuts and tea.

COST OF LIVING,				\$915 45
Rent, \$132 00	Milk, \$21 00	Religion,		\$18 00
Fuel, 42 50	Boots and shoes, 49 00	Societies and charity,		15 00
Groceries, 366 70	Clothing, 136 75	Books and papers,		8 00
Meat and fish, 86 90	Dry goods, 19 60	Sundries,		20 00

No. 132.	MACHINIST.	American.
EARNINGS of father,		\$620
son, aged 15,		290
		<hr/> \$910

CONDITION.—Family numbers 6, parents and 4 children from six to fifteen years of age; three go to school. Live in a tenement of 6 rooms, in a pleasant and healthy locality. The apartments are well furnished, with parlor carpeted. Own a sewing-machine. Family dresses well and attends church.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat or eggs, cake and coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pickles, pie, tea.
<i>Supper.</i>	Bread, butter, fish or cheese, cake and tea.

COST OF LIVING,				\$910	
Rent,	\$144 00	Milk,	\$30 60	Societies,	\$8 00
Fuel,	54 40	Boots and shoes,	32 00	Religion,	14 00
Groceries,	371 70	Clothing,	81 00	Sundries,	21 75
Meat,	108 65	Dry goods,	24 00		
Fish,	14 00	Papers,	6 00		

No. 133.	MACHINIST.	American.
EARNINGS of father,		\$716

CONDITION.—Family numbers 5, parents and 3 children from one to seven years of age; two go to school. Occupy a tenement of 5 rooms, pleasantly situated, in a healthy neighborhood. House is well furnished, with the parlor carpeted. Own a sewing-machine, on which the mother makes all the clothes, except the father's. Family dresses well and attends church.

FOOD.— <i>Breakfast.</i>	Hot biscuit, butter, meat or eggs, cake, tea.
<i>Dinner.</i>	Brown bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, tea.
<i>Supper.</i>	Bread, butter, sauce, syrup or cheese, gingerbread, tea.

COST OF LIVING,				\$716	
Rent,	\$132 00	Fish,	\$14 00	Dry goods,	\$37 75
Fuel,	48 50	Milk,	15 80	Religion,	12 00
Groceries,	251 90	Boots and shoes,	27 50	Books and papers,	7 00
Meat,	98 25	Clothing,	50 00	Sundries,	26 30

No. 134.	MACHINIST.	American.
EARNINGS of father,		\$616

CONDITION.—Family numbers 4, parents and 2 children of four and seven years of age; one goes to school. Have a tenement of 5 rooms, well situated in a good neighborhood, and with pleasant and healthy surroundings. The rooms are well furnished. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat or eggs, cake and coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pickles, pie and tea
<i>Supper.</i>	Bread, butter, sauce, cake and tea.

Cost of Living,				\$616	
Rent,	\$72 00	Milk,	\$15 70	Papers,	\$7 00
Fuel,	50 00	Boots and shoes,	22 84	Sundries,	27 10
Groceries,	290 06	Clothing,	40 00		
Meat,	71 30	Dry goods,	20 00		

No. 135.

MACHINIST.

American.

EARNINGS of father, \$338

CONDITION.—Family numbers 4, parents and 2 children of four and eight years of age; one goes to school. Live in a tenement of 6 rooms, pleasantly situated in a good locality, with healthy surroundings. The apartments are well furnished and rooms carpeted. Own a piano, also a sewing-machine. The house is kept in good condition, much above the average of other homes of the same class of operatives. Family dresses well and attends church. Has a good library, and subscribes for 2 magazines and 3 papers.

FOOD.—*Breakfast.* Bread, butter, cold meat or eggs, pie or cake, coffee.*Dinner.* Bread, butter, meat, potatoes, vegetables, pickles, pie and tea.*Supper.* Bread, butter, fish, cheese or sauce, cake, tea. Have baked beans Saturday evening and Sunday morning.

COST OF LIVING, \$357 17

Rent, \$216 00	Milk, \$20 80	Societies, \$12 00
Fuel, 69 00	Boots and shoes, 23 75	Religion, 18 00
Groceries, 279 58	Clothing, 66 00	Sundries, 42 00
Meat, 83 64	Dry goods, 27 90	
Fish, 9 00	Books and papers, 19 50	

No. 136.

MACHINIST.

American.

EARNINGS of father, \$772

son, aged 15, 200

\$972

CONDITION.—Family numbers 6, parents and 4 children from five to fifteen years of age; three go to school. Occupy a tenement of 6 rooms, pleasantly situated about a mile from the shop, in a good neighborhood, with small garden attached. The house is nicely furnished, with rooms carpeted, and everything shows taste and refinement seldom seen among working men. Have a cottage-organ and sewing-machine. Family is intelligent and dresses well. Does not attempt to save money, but spends it to make family comfortable. The father has his life insured for \$1,000; he pays cash for goods, and keeps a record of income and expenditure.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, pie, tea.*Dinner.* Brown bread, butter, meat, potatoes, vegetables, pickles, pudding or pie, tea.*Supper.* Bread, butter, graham bread, sauce, cheese or fish, cake, tea. Boiled dinner one day in the week. Baked beans on Sunday.

COST OF LIVING, \$359

Rent, \$225 00	Fish, \$14 20	Dry goods, \$23 33
Fuel, 41 50	Milk, 18 80	Books and papers, 12 00
Groceries, 347 90	Boots and shoes, 31 95	Charity, 10 00
Meat, 99 60	Clothing, 86 00	Sundries, 45 90

No. 137.

MACHINIST.

American.

EARNINGS of father, \$784

CONDITION.—Family numbers 3, parents and 1 child nine years of age, who goes to school. Have a tenement of 4 rooms, located about three-quarters of a mile from the shop, in a good neighborhood, with pleasant surroundings. The rooms are well furnished, and the parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Hot biscuit, butter, eggs or meat, cake, tea.*Dinner.* Bread, butter, meat, potatoes, vegetables, pie and tea.*Supper.* Bread, butter, cheese, sauce, cake, tea.

COST OF LIVING, \$773 48

Rent, \$168 00	Milk, \$15 40	Societies, \$10 00
Fuel, 40 50	Boots and Shoes, 20 00	Religion, 14 00
Groceries, 269 43	Clothing, 69 50	Sundries, 24 24
Meat, 85 21	Dry goods, 43 00	
Fish, 6 20	Papers, 8 00	

No. 138.

MACHINIST.

American.

EARNINGS of father, \$820

CONDITION.—Family numbers 4, parents and 2 children of two and four years of age. Live in a tenement of 6 rooms, well situated, in good and pleasant surroundings. The apartments are well furnished and rooms carpeted. Have a sewing and other labor-saving machines. Family dresses well and attends church. Has money in savings bank. Unless the mechanic has a large family, believes that they should economize and save money as a provision against sickness and dullness of trade.

FOOD.—*Breakfast.* Bread, butter, cold meat, cake or pie, and tea.*Dinner.* Bread, butter, meat, potatoes, vegetables in season, pickles, pie and tea.*Supper.* Bread, butter, sauce, sometimes fish, cake and tea. Have baked beans on Sunday.

COST OF LIVING, \$765

Rent, \$25 00	Fish, \$12 00	Dry goods, \$18 00
Fuel, 43 00	Milk, 15 20	Papers, 6 00
Groceries, 231 90	Boots and shoes, 20 75	Religion, 10 00
Meat, 72 85	Clothing, 77 00	Sundries, 85 30

No. 139.

MACHINIST.

American.

EARNINGS of father, \$643

CONDITION.—Family numbers 4, parents and 2 children of six and nine years of age; both go to school. Occupy a tenement of 5 rooms, with pleasant and healthy surroundings. House is well furnished, with the parlor carpeted. Own a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, the remains of dinner, or eggs, gingerbread and tea.*Dinner.* Meat, potatoes, sometimes vegetables, bread, pie.*Supper.* Bread, butter, sauce, tea.

COST OF LIVING, \$643

Rent, \$120 00	Fish, \$7 43	Dry goods, \$26 00
Fuel, 49 00	Milk, 15 60	Papers, 6 00
Groceries, 239 23	Boots and shoes, 21 00	Religion, 10 00
Meat, 85 46	Clothing, 50 85	Sundries, 12 43

No. 140.

MACHINIST.

American.

EARNINGS of father, \$639

CONDITION.—Family numbers 3, parents and 1 child four years of age. Have a tenement of 4 rooms, in a healthy locality, with neat and clean surroundings. The rooms are well furnished and carpeted. Have a sewing-machine. Family dresses well.

FOOD.—*Breakfast.* Hot biscuit, butter, what was left from dinner, and tea.*Dinner.* Bread, butter, meat, potatoes, vegetables in season, pudding or pie, and tea.*Supper.* Bread, butter, gingerbread and tea.

COST OF LIVING, \$623

Rent, \$120 00	Fish, \$8 42	Dry goods, \$18 50
Fuel, 44 75	Milk, 19 24	Papers, 12 00
Groceries, 229 34	Boots and shoes, 20 00	Societies, 8 00
Meat, 78 59	Clothing, 47 00	Sundries, 22 16

No. 141.

MACHINIST.

American.

EARNINGS of father, \$367

CONDITION.—Family numbers 4, parents and 2 children of eight and eleven years of age; both go to school. Live in a tenement of 5 rooms, situated in a pleasant neighborhood, with clean and healthy surroundings. The apartments are well furnished and carpeted. Have a sewing and other labor-saving machines. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat, cake, coffee.*Dinner.* Bread, butter, meat, potatoes, pie and tea.*Supper.* Bread, butter, sauce, cake, tea.

COST OF LIVING, \$367

Rent, \$180 00	Fish, \$8 62	Dry goods, \$30 45
Fuel, 51 00	Milk, 14 96	Papers, 9 00
Groceries, 361 93	Boots and shoes, 22 00	Religion, 16 00
Meat, 107 40	Clothing, 53 50	Sundries, 12 14

No. 142.

MACHINIST.

American.

EARNINGS of father, \$716

CONDITION.—Family numbers 3, parents and 1 child of four years of age. Occupy a tenement of 5 rooms in a good locality, with agreeable surroundings. House is well furnished, and the parlor carpeted. Own a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat, gingerbread and coffee.*Dinner.* Bread, butter, meat, potatoes, vegetables, pie, tea.*Supper.* Bread, butter, sauce, cake, tea.

COST OF LIVING, \$575

Rent, \$120 00	Fish, \$10 00	Dry goods, \$21 50
Fuel, 53 50	Milk, 16 95	Religion, 10 00
Groceries, 269 70	Boots and shoes, 20 70	Papers, 7 00
Meat, 63 40	Clothing, 49 00	Sundries, 33 26

No. 143.

MACHINIST.

American.

EARNINGS of father, \$370

CONDITION.—Family numbers 4, parents and 2 children of two and twelve years of age; one goes to school. Have a tenement of 5 rooms, situated about three-quarters of a mile from the shop, in a good neighborhood, and with healthy and clean surroundings; good yard-room; small garden. The rooms are clean, lofty and well arranged; parlor and bedrooms carpeted. Have a sewing-machine and piano. Family dresses well and attends church. Buys all goods for cash and keeps an account. Has money in savings bank.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake and coffee.*Dinner.* Bread, butter, meat or some kind of fish, potatoes, vegetables, pickles, pudding or pie, and tea.*Supper.* Bread, butter, cheese, sauce or fruit, cake and pie, tea. Beans once per week.

COST OF LIVING, \$786 22

Rent, \$180 00	Milk, \$26 84	Books and papers, \$12 00
Fuel, 41 75	Boots and shoes, 21 72	Societies, 8 00
Groceries, 226 76	Clothing, 102 00	Sundries, 49 00
Meat, 71 25	Dry goods, 22 00	
Fish, 9 00	Religion, 16 00	

No. 144.

MACHINIST.

English.

EARNINGS of father, \$748

CONDITION.—Family numbers 4, parents and 2 children of five and thirteen years of age; both go to school. Live in a tenement of 4 rooms, well situated, with good surroundings. The apartments are well furnished. Family dresses well, and are very intelligent. Have a sewing and other labor-saving machines, also a good library.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pie or pudding, fruit in season, and tea.
Supper. Bread, butter, cheese, gingerbread, tea.

COST OF LIVING, \$728

Rent, \$132 00	Fish, \$6 00	Dry goods, . . . \$37 50
Fuel, 41 50	Milk, 22 62	Papers, 15 00
Groceries, . . . 229 80	Boots and shoes, . 25 00	Societies, 8 00
Meat, 105 23	Clothing, 50 00	Sundries, 55 35

No. 145.

MACHINIST.

English.

EARNINGS of father, \$688

CONDITION.—Family numbers 4, parents and 2 children of two years and three years and a half of age. Occupy a tenement of 4 rooms, well situated, in a good neighborhood, with neat and healthy surroundings. The house is moderately well furnished, and kept in good order. Family dresses well. Cannot save much money; if health failed, have a little to draw upon, but should soon run in debt.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake, coffee.
Dinner. Bread, butter, meat, potatoes, pudding or pie.
Supper. Bread, butter, cheese, or fish, sauce, pie, tea. Beans Saturday night and Sunday morning.

COST OF LIVING, \$644

Rent, \$96 00	Fish, \$8 00	Dry goods, . . . \$18 50
Fuel, 41 00	Milk, 16 20	Books and papers, . 3 00
Groceries, . . . 253 59	Boots and shoes, . 30 00	Sundries, 24 11
Meat, 92 60	Clothing, 61 00	

No. 146.

MACHINIST.

English.

EARNINGS of father, \$718
 daughter, aged 16, 200
\$918

CONDITION.—Family numbers 5, parents and 3 children from nine to sixteen years of age; two go to school. Have a tenement of 6 rooms, well situated, and with good surroundings. The rooms are well furnished, and the parlor carpeted. Have a piano and sewing-machine. Family dresses well, and have money in the savings bank.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake, tea and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pudding or pie, and tea.
Supper. Bread, butter, cheese or sauce, and tea.

COST OF LIVING, \$923

Rent, \$150 00	Fish, \$12 60	Dry goods, . . . \$26 50
Fuel, 55 25	Milk, 28 60	Books and papers, . 22 00
Groceries, . . . 371 62	Boots and shoes, . 35 00	Societies, 9 00
Meat, 99 74	Clothing, 80 00	Sundries, 32 60

No. 147.

MACHINIST.

English.

EARNINGS of father,	\$578
daughter, aged 19,	357
	<hr/> \$1,035

CONDITION.—Family numbers 5, parents and 3 children from six to nineteen years of age; two go to school. Live in a tenement of 6 rooms, situated in a pleasant locality, with agreeable surroundings. The apartments are well furnished, and parlor carpeted. Own an organ, also have a sewing and other labor-saving machines. Father is a member of several societies; has his life insured. Family dresses well and attends church. Has struggled hard for several years to attain his present position, and can now save money.

FOOD.—*Breakfast.* Bread, butter, ham and eggs, or meat and fried potatoes, pie, coffee.

Dinner. Bread, butter, meat, potatoes, vegetables in season, pickles, pudding, tea.

Supper. Bread, butter, cheese, fruit, either fresh or preserved, cake, pie, tea.
Have beans on Saturday.

COST OF LIVING,			\$339 45
Rent,	\$144 00	Milk,	\$24 00
Fuel,	49 75	Societies,	\$12 00
Groceries,	352 00	Boots and shoes,	30 75
Meat,	82 00	Religion,	16 00
		Clothing,	136 50
		Dry goods,	49 00
		Books and papers,	6 25
		Sundries,	36 00

No. 148.

MACHINIST.

English.

EARNINGS of father,	\$630
daughter, aged 16,	243
	<hr/> \$873

CONDITION.—Family numbers 6, parents and 4 children from six to sixteen years of age; three go to school. Occupy a tenement of 8 rooms, in a good locality, with pleasant and healthy surroundings. The house is well furnished, and the parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat, gingerbread, coffee.

Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie.

Supper. Bread, butter, sauce or cheese, tea.

COST OF LIVING,				\$359	
Rent,	\$84 00	Milk,	\$23 80	Papers,	\$6 00
Fuel,	57 00	Boots and shoes, . .	23 00	Religion,	14 00
Groceries, . . .	400 68	Clothing,	60 00	Sundries,	39 38
Meat,	112 14	Dry goods,	34 50		

No. 149.

MACHINIST.

English.

EARNINGS of father,	\$760
son, aged 16,	298
	<hr/> \$1,058

CONDITION.—Family numbers 6, parents and 4 children from one to sixteen years of age; two go to school. Have a tenement of 6 rooms, situated conveniently near the shop, but in a street where yard-room is very small, but what little there is kept neat and clean; the sanitary arrangements are good. The rooms are well furnished, and the bedrooms carpeted. Family dresses well and attends church. The father takes an active part in several societies that have for their object the improvement of the working-classes. He has a fine library, and is very intelligent.

FOOD.—*Breakfast.* Bread, butter, eggs, meat, cake, tea and coffee.

Dinner. Bread, butter, meat, potatoes, vegetables, pudding, tea and fruit.

Supper. Bread, butter, cold meat or cheese, sauce, pie and tea.

COST OF LIVING,				\$1,018 31	
Rent,	\$204 00	Milk,	\$26 66	Books and papers, . .	\$12 00
Fuel,	51 75	Boots and shoes, . .	28 40	Societies,	17 00
Groceries, . . .	401 60	Clothing,	90 00	Religion,	12 00
Meat,	106 00	Dry goods,	31 80	Sundries,	35 00

No. 150.

MACHINIST.

English.

EARNINGS of father, \$748

CONDITION.—Family numbers 3, parents and 1 child three years of age. Live in a tenement of 4 rooms, in a good neighborhood, with clean and healthy surroundings; sanitary arrangements are also very good. Have plenty of room for yard purposes. The apartments are well furnished, and parlor carpeted. Have a cottage-organ, also sewing-machine. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake and tea.

Dinner. Bread, butter, meat, potatoes, vegetables in season, pie.

Supper. Bread, butter, sauce or preserved fruit, gingerbread and tea.

COST OF LIVING, \$727

Rent, . . . \$180 00	Fish, . . . \$7 22	Dry goods, . . \$17 25
Fuel, . . . 47 50	Milk, . . . 14 60	Books and papers, . 22 00
Groceries, . . 242 23	Boots and shoes, . 24 00	Religion, . . . 16 00
Meat, . . . 81 19	Clothing, . . . 53 60	Sundries, . . . 21 41

No. 151.

MACHINIST.

English.

EARNINGS of father, \$677

CONDITION.—Family numbers 4, parents and 2 children of two and five years of age; one goes to school. Occupy a tenement of 4 rooms, with good and pleasant surroundings. The house is well furnished, with parlor carpeted. Own a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, cold meat, cake, coffee.

Dinner. Brown bread, butter, meat, potatoes, sometimes vegetables, pie.

Supper. Bread, butter, sauce or cheese, gingerbread, tea.

COST OF LIVING, \$677

Rent, . . . \$72 00	Fish, . . . \$6 00	Dry goods, . . \$23 00
Fuel, . . . 48 00	Milk, . . . 13 20	Religion, . . . 8 00
Groceries, . . 327 37	Boots and shoes, . 17 50	Papers, . . . 5 00
Meat, . . . 86 35	Clothing, . . . 41 50	Sundries, . . . 29 08

No. 152.

MACHINIST.

English.

EARNINGS of father, \$800

CONDITION.—Family numbers 5, parents and 3 children from one to sixteen years of age; two go to school. Have a tenement of 5 rooms, pleasantly situated about a mile from the shop, in a good neighborhood, with excellent surroundings; small flower-garden attached. The rooms are well furnished, and carpeted. Have a piano and sewing-machine. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake and coffee.

Dinner. Bread, butter, meat, potatoes, vegetables, pudding or pie.

Supper. Bread, butter, cheese, gingerbread and tea.

COST OF LIVING, \$800

Rent, . . . \$168 00	Milk, . . . \$15 00	Papers, . . . \$9 00
Fuel, . . . 43 00	Boots and shoes, . 36 00	Societies, . . . 8 00
Groceries, . . 301 30	Clothing, . . . 72 75	Sundries, . . . 31 55
Meat, . . . 91 40	Dry goods, . . . 24 00	

No. 153.	MACHINIST.	German.
EARNINGS of father,		\$670
son, aged 16,		200
		<hr/> \$870

CONDITION. Family numbers 6, parents and 4 children from three to sixteen years of age; two go to school. Live in a tenement of 4 rooms, in a miserable locality, with poor surroundings. Have very little yard-room. The apartments are well furnished and kept very clean, also have parlor carpeted. Own a sewing and other labor-saving machines. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, cold meat, warmed potatoes, coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pie.
<i>Supper.</i>	Bread, butter, cheese or sauce, tea.

COST OF LIVING,					\$356 25
Rent,	\$180 00	Fish,	\$6 00	Dry goods,	\$13 00
Fuel,	56 00	Milk,	18 20	Papers,	6 00
Groceries,	363 00	Boots and shoes,	27 65	Societies,	7 00
Meat,	102 90	Clothing,	53 50	Sundries,	15 00

No. 154.	MACHINIST.	Irish.
EARNINGS of father,		\$716
daughter, aged 17,		323
son, aged 16,		160
		<hr/> \$1,199

CONDITION.—Family numbers 8, parents and 6 children from three to seventeen years of age; two go to school. Occupy a tenement of 6 rooms, besides sink-room, in a good locality, with pleasant and agreeable surroundings, about three-quarters of a mile from mills; prefer going that distance, as the air is better than in the centre of the city. House is well furnished, with the parlor carpeted. Own a sewing-machine. The mother does her own house-work, with the assistance of a washerwoman, and keeps the house very neat. Parents have had a hard struggle; having a large family, they ran considerably in debt, and it is only within the last year that they have been able to feel free from obligation; they are doing well now, with the assistance of children. Family dresses well and attends church.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat or fish, and potatoes warmed, cake, coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pie or bread-pudding.
<i>Supper.</i>	Bread, butter, fish or cheese, cake, tea. Have a boiled dinner once a week.

COST OF LIVING,					\$1,006
Rent,	\$150 00	Fish,	\$15 37	Dry goods,	\$43 00
Fuel,	63 00	Milk,	33 40	Religion,	25 00
Groceries,	446 00	Boots and shoes,	37 95	Books and papers,	8 50
Meat,	119 76	Clothing,	116 50	Sundries,	30 33

No. 155.	MACHINIST.	Scot.A.
EARNINGS of father,		\$300

CONDITION.—Family numbers 4, parents and 2 children of ten and fourteen years of age; both go to school. Have a tenement of 4 rooms in suburbs, with very good surroundings. The house is well furnished, and rooms carpeted. Have an organ and a sewing-machine. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat or eggs, cake and tea.
<i>Dinner.</i>	Meat, potatoes, sometimes vegetables, bread, pudding or pie.
<i>Supper.</i>	Bread, butter, fish or cheese, cake and tea.

COST OF LIVING,					\$376 02
Rent,	\$225 00	Milk,	\$22 60	Papers,	\$9 00
Fuel,	41 80	Boots and shoes,	28 00	Societies,	14 00
Groceries,	280 37	Clothing,	50 00	Sundries,	21 00
Meat,	89 50	Dry goods,	16 50		
—	6 25	Horse-cars,	12 00		

No. 156.

NAIL-MAKER.

American.

EARNINGS of father,	\$725
son, aged 14,	370
	<hr/> \$1,095

CONDITION.—Family numbers 6, parents and 4 children from four to sixteen years of age; two go to school. Live in a tenement of 6 rooms, conveniently situated, in a good neighborhood, with healthy surroundings. House has small garden attached. The apartments are well furnished, and rooms carpeted. Own a piano. Family dresses well. Could not support themselves without assistance of son.

FOOD. — <i>Breakfast.</i>	Bread, graham bread, butter, fresh steak or eggs, cake, pie and coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pickles, pie, pudding, sometimes fruit, and tea.
<i>Supper.</i>	Bread, butter, cold meat, sometimes fish, cheese, cake, and tea.

COST OF LIVING, \$1,052

Rent,	\$246 00	Fish,	\$7 40	Dry goods,	\$29 60
Fuel,	49 00	Milk,	28 50	Papers,	8 00
Groceries,	389 00	Boots and shoes,	40 50	Societies,	12 00
Meat,	108 60	Clothing,	100 00	Sundries,	39 40

No. 157.

WATCHMAKER.

American.

EARNINGS of father,	\$729
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CONDITION.—Family numbers 4, parents and 2 children of four and six years of age; one goes to school. Live in a tenement of 5 rooms, pleasantly situated, in a good neighborhood. The apartments are well furnished, and parlor carpeted. Own a sewing-machine. Family dresses well and attends church.

FOOD. — <i>Breakfast.</i>	Bread, butter, meat or eggs, cake, coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pickles, pie and tea.
<i>Supper.</i>	Bread, butter, sauce, gingerbread and tea.

COST OF LIVING, \$720

Rent,	\$132 00	Fish,	\$7 96	Dry goods,	\$25 00
Fuel,	50 00	Milk,	15 64	Papers,	8 75
Groceries,	276 85	Boots and shoes,	20 00	Religion,	12 00
Meat,	91 48	Clothing,	64 80	Sundries,	15 62

Unskilled.

METAL-WORKERS.

17 Families.

No. 158.

LABORER, IN CUTLERY-WORKS.

German.

EARNINGS of father,	\$441
son, aged 13,	178
	<hr/> \$619

CONDITION.—Family numbers 5, parents and 3 children from one to thirteen years of age. Have a tenement of 4 rooms, well situated, with good surroundings, plenty of yard-room, and a small garden. The rooms are well furnished, and the parlor carpeted. Family dresses plainly, but well.

FOOD. — <i>Breakfast.</i>	Bread, butter, cold meat, or what was left from dinner, and coffee.
<i>Dinner.</i>	Bread, butter, meat and potatoes.
<i>Supper.</i>	Bread, butter, gingerbread and tea.

COST OF LIVING, \$504

Rent,	\$75 00	Fish,	\$9 00	Dry goods,	\$23 50
Fuel,	43 25	Milk,	26 60	Papers,	6 00
Groceries,	218 55	Boots and shoes,	18 00	Societies,	8 00
Meat,	73 00	Clothing,	50 50	Sundries,	42 00

No. 159.	LABORER, IN CUTLERY-WORKS.	German.
EARNINGS of father,		\$384
son, aged 13,		196
		<hr/> \$580

CONDITION.—Family numbers 5, parents and 3 children from two to thirteen years of age; one goes to school. Live in a tenement of 4 rooms, with good surroundings. The apartments are moderately well furnished. Family dresses quite plainly. Takes all the earnings to pay debts.

FOOD.—*Breakfast.* Bread, butter, remains left from dinner, coffee.
Dinner. Bread, meat, potatoes, sometimes vegetables, occasionally pie.
Supper. Bread, butter, tea.

COST OF LIVING,		\$580
Rent, \$60 00	Fish, \$5 50	Dry goods, . . . \$24 00
Fuel, 32 00	Milk, 15 46	Papers, 4 00
Groceries, . . 236 79	Boots and shoes, . 17 37	Societies, . . . 6 00
Meat, 78 33	Clothing, 49 00	Sundries, . . . 51 55

No. 160.	LABORER, IN CUTLERY-WORKS.	Fish.
EARNINGS of father,		\$426
son, aged 14,		162
		<hr/> \$588

CONDITION.—Family numbers 5, parents and 3 children from five to fourteen years of age; two go to school. Occupy a tenement of 5 rooms, with good and pleasant surroundings. House is moderately well furnished. Family dresses plainly, but comfortably. Has money in savings bank.

FOOD.—*Breakfast.* Bread, butter, corned meat, or salt fish, coffee.
Dinner. Meat or fish, potatoes, bread, sometimes pie.
Supper. Bread, butter, and the remains left from dinner.

COST OF LIVING,		\$580
Rent, \$72 00	Fish, \$16 80	Dry goods, . . . \$30 85
Fuel, 35 50	Milk, 23 50	Papers, 2 00
Groceries, . . 213 97	Boots and shoes, . 21 00	Sundries, . . . 25 95
Meat, 93 40	Clothing, 30 00	

No. 161.	LABORER, IN IRON WORKS.	English.
EARNINGS of father,		\$416
son, aged 14,		278
		<hr/> \$694

CONDITION.—Family numbers 5, parents and 3 children from three to fourteen years of age; one goes to school. Have a tenement of 4 rooms, with good surroundings. The rooms are moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, what was left from dinner, and coffee.
Dinner. Meat, potatoes, bread, sometimes pie.
Supper. Bread, butter, sometimes fish, and tea.

COST OF LIVING,		\$694
Rent, \$100 00	Fish, \$5 31	Dry goods, . . . \$13 00
Fuel, 49 80	Milk, 23 25	Papers, 5 00
Groceries, . . 327 91	Boots and shoes, . 17 00	Sundries, . . . 24 33
Meat, 89 80	Clothing, 30 40	

No. 102.

LABORER, IN IRON-WORKS.

F. Canadian.

EARNINGS of father,	\$480
daughter, aged 16,	310
	<hr/> \$790

CONDITION.—Family numbers 7, parents and 5 children from two to sixteen years of age; two go to school. Live in a tenement of 5 rooms, in a very poor locality, with very dirty and disagreeable surroundings. House badly out of repair, leakage in the roof, sink-drains broken, and the yard in a filthy condition. The apartments are poorly furnished, but as clean as could be expected in such a locality.

FOOD. — <i>Breakfast.</i>	Bread, butter, meat, cake and tea.
<i>Dinner.</i>	Bread, sometimes soup, meat, potatoes, vegetables, pie.
<i>Supper.</i>	Bread, butter, fish or cheese, cake, tea.

COST OF LIVING,				\$790	
Rent,	\$144 00	Fish,	\$15 00	Dry goods,	\$33 00
Fuel,	37 00	Milk,	26 50	Sundries,	24 10
Groceries,	341 20	Boots and shoes,	32 80		
Meat,	67 90	Clothing,	68 50		

No. 103.

LABORER, IN IRON-WORKS.

Irish.

EARNINGS of father,	\$382
son, aged 13,	159
	<hr/> \$541

CONDITION.—Family numbers 5, parents and 3 children from two to thirteen years of age; one goes to school. Occupy a tenement of 4 rooms, with good surroundings. House poorly furnished. Family does not dress well.

FOOD. — <i>Breakfast.</i>	Bread, butter, coffee.
<i>Dinner.</i>	Meat or fish, potatoes, bread.
<i>Supper.</i>	Bread, butter, tea.

COST OF LIVING,				\$541	
Rent,	\$84 00	Fish,	\$6 22	Dry goods,	\$10 60
Fuel,	29 60	Milk,	12 40	Sundries,	15 64
Groceries,	300 48	Boots and shoes,	13 00		
Meat,	48 06	Clothing,	21 00		

No. 104.

LABORER, IN IRON-WORKS.

Irish.

EARNINGS of father,	\$490
son, aged 14,	270
	<hr/> \$760

CONDITION.—Family numbers 8, parents and 6 children from nine months to fourteen years of age. Have a tenement of 4 rooms, situated in a disagreeable neighborhood, in an overcrowded block, to which belong only two privies for about fifty people. When this place was visited the vault had overflowed in the yard and run a considerable distance; the sink-water was also running in the same place, and created a stench that was really frightful. How people can live, or why they are allowed to live, in such places, is beyond comprehension. The house inside, partaking of the character of the surroundings, was badly furnished and dirty, and a disgrace to Worcester.

FOOD. — <i>Breakfast.</i>	Bread, butter, corned meat or salt fish, potatoes and coffee.
<i>Dinner.</i>	Meat, potatoes, sometimes vegetables, bread.
<i>Supper.</i>	Bread, butter, warmed potatoes and tea.

COST OF LIVING,				\$716	
Rent,	\$120 00	Fish,	\$14 20	Dry goods,	\$13 00
Fuel,	23 00	Milk,	17 25	Sundries,	47 04
Groceries,	370 61	Boots and shoes,	16 35		
Meat,	49 75	Clothing,	44 80		

No. 166.	LABORER, IN MACHINE-SHOP.	English.
EARNINGS of father,		\$500
daughter, aged 16,		180
		<hr/> \$680

CONDITION.—Family numbers 4, parents and 2 children of nine and sixteen years of age; one goes to school. Live in the suburbs, in a tenement of 4 rooms, in a good locality. The apartments are moderately well furnished. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, sometimes cheese, coffee.
<i>Dinner.</i>	Bread, meat and potatoes.
<i>Supper.</i>	Bread, butter, meat, gingerbread and tea.

COST OF LIVING,			\$350
Rent, \$144 00	Fish, \$7 43	Dry goods,	\$9 00
Fuel, 47 50	Milk, 22 10	Papers,	8 00
Groceries, . . . 283 91	Boots and shoes, . . 18 75	Sundries,	25 21
Meat, 70 60	Clothing, 32 50		

No. 166.	LABORER, IN MACHINE-SHOP.	English.
EARNINGS of father,		\$420
daughter, aged 16,		300
son, aged 14,		180
		<hr/> \$900

CONDITION.—Family numbers 7, parents and 5 children from three to sixteen years of age; two go to school. Occupy in a tenement of 6 rooms, in a good locality. House is well furnished and parlor carpeted. Family dresses well. Can save money now, with the assistance of children, but had a very hard struggle while they were young.

FOOD.— <i>Breakfast.</i>	Bread, butter, cold corned meat or eggs, coffee.
<i>Dinner.</i>	Meat, potatoes, vegetables, bread, pie or pudding.
<i>Supper.</i>	Bread, butter, cheese or cold meat, cake, tea.

COST OF LIVING,			\$350
Rent, \$168 00	Milk, \$13 70	Papers,	\$5 00
Fuel, 45 00	Boots and shoes, . . 26 75	Societies,	6 00
Groceries, . . . 349 20	Clothing, 75 00	Sundries,	36 79
Meat, 101 56	Dry goods, 23 00		

No. 167.	LABORER, IN MACHINE-SHOP.	F. Canadian.
EARNINGS of father,		\$502
son, aged 14,		171
		<hr/> \$673

CONDITION.—Family numbers 5, parents and 3 children from two to fourteen years of age; one goes to school. Have a tenement of 4 rooms, situated in a poor neighborhood; surroundings dirty. The house is out of repair and damp, caused partially by a leaky roof. Sanitary arrangements poor. House poorly furnished. Family dresses poorly, but lives within means.

FOOD.— <i>Breakfast.</i>	Bread, butter, corned meat or salt fish, coffee.
<i>Dinner.</i>	Meat, potatoes, bread, sometimes pie.
<i>Supper.</i>	Bread, butter, sometimes fish, and tea. Most of the meat they use is cheap boiling pieces.

COST OF LIVING,			\$357
Rent, \$120 00	Fish, \$13 80	Dry goods,	\$16 80
Fuel, 81 00	Milk, 18 65	Sundries,	47 85
Groceries, . . . 236 80	Boots and shoes, . . 18 00		
Meat, 63 90	Clothing, 41 00		

No. 168.

LABORER, IN MACHINE-SHOP.

German.

EARNINGS of father,	\$439
son, aged 15,	300
	<hr/> \$739

CONDITION.—Family numbers 5, parents and 3 children from one to fifteen years of age; one goes to school. Live in a tenement of 4 rooms, in a poor locality, with miserable surroundings. The apartments are moderately well furnished. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, what was left from dinner.
<i>Dinner.</i>	Bread, meat, potatoes, pickles and pie.
<i>Supper.</i>	Bread, butter, cheese and tea.

COST OF LIVING,				\$718 80	
Rent,	\$132 00	Fish,	\$12 80	Dry goods,	\$15 80
Fuel,	46 25	Milk,	16 34	Papers,	4 00
Groceries,	330 20	Boots and shoes,	20 00	Societies,	8 00
Meat,	74 90	Clothing,	42 00	Sundries,	16 60

No. 169.

LABORER, IN MACHINE SHOP.

German.

EARNINGS of father,	\$493
son, aged 16,	221
	<hr/> \$714

CONDITION.—Family numbers 5, parents and 3 children from four to sixteen years of age; Occupy a tenement of 4 rooms, in third story, with unclean surroundings. The house is moderately well furnished and neat. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, pork and potatoes, coffee.
<i>Dinner.</i>	Meat, potatoes, bread.
<i>Supper.</i>	Bread, butter, sometimes cheese, gingerbread, tea.

COST OF LIVING,				\$714	
Rent,	\$120 00	Fish,	\$6 30	Dry goods,	\$23 80
Fuel,	38 00	Milk,	15 00	Papers,	4 00
Groceries,	349 80	Boots and shoes,	16 00	Sundries,	23 37
Meat,	68 57	Clothing,	48 56		

No. 170.

LABORER, IN MACHINE-SHOP.

Irish.

EARNINGS of father,	\$500
daughter, aged 17,	330
son, aged 15,	140
	<hr/> \$970

CONDITION.—Family numbers 6, parents and 4 children from seven to seventeen years of age; two go to school. Have a tenement of 6 rooms, well situated, and with good surroundings. The house is out of repair and inconvenient; rooms small, especially the bedrooms, which are only 9x9 feet, with one window in each room, and the rooms low-studded. The house is well furnished, and the parlor carpeted. Family dresses well and saves money.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat or fish, gingerbread and coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables and pie.
<i>Supper.</i>	Bread, butter, cold meat or fish, cake and tea.

COST OF LIVING,				\$925	
Rent,	\$180 00	Fish,	\$16 00	Dry goods,	\$31 50
Fuel,	81 00	Milk,	29 70	Papers,	4 00
Groceries, . . .	399 84	Boots and shoes, . .	29 50	Religion,	12 00
Meat,	91 00	Clothing,	80 00	Sundries,	20 46

No. 171.	LABORER, IN MACHINE-SHOP.	<i>Irish.</i>
EARNINGS of father,		\$546
son, aged 16,		337
		<hr/> \$883

CONDITION.—Family numbers 4, father and 3 children from seven to sixteen years of age; one goes to school. The mother is dead, and the eldest, a girl of fifteen years, takes entire charge of the housework, and performs her many duties with great care. Live in a tenement of 4 rooms, in a fair locality, but not very pleasantly surrounded. The apartments are moderately well furnished, and kept in good order. Family dresses well and attends church. Has money in savings bank.

FOOD.— <i>Breakfast.</i>	Bread, butter, cold meat or fish, pie, coffee.
<i>Dinner.</i>	Bread, meat or fish, potatoes, vegetables, pie.
<i>Supper.</i>	Bread, butter, cold meat, gingerbread.

COST OF LIVING,			\$331
Rent, \$180 00	Fish, \$18 00	Dry goods,	\$30 00
Fuel, 49 00	Milk, 24 35	Papers,	4 00
Groceries, . . . 307 50	Boots and shoes, . . 22 75	Religion,	12 00
Meat, 89 40	Clothing, 51 80	Sundries,	52 20

No. 172.	LABORER, IN MACHINE SHOP.	<i>Irish.</i>
EARNINGS of father,		\$380
son, aged 18,		175
		<hr/> \$555

CONDITION.—Family numbers 6, parents and 4 children from two to thirteen years of age; one only goes to school. Occupy a tenement of 4 rooms, in poor locality, with unhealthy surroundings. The house is miserably furnished. Family dresses very poorly. Had considerable sickness last year, and ran in debt.

FOOD.— <i>Breakfast.</i>	Bread, butter, sometimes salt pork, coffee.
<i>Dinner.</i>	Meat, potatoes, sometimes cabbage, bread.
<i>Supper.</i>	Bread, butter, tea. Boiled pork and cabbage one day per week.

COST OF LIVING,			\$351
Rent, \$90 00	Fish, \$12 40	Dry goods,	\$18 70
Fuel, 38 50	Milk, 15 23	Sundries, including	
Groceries, . . . 317 80	Boots and shoes, . . 12 00	doctor's bill, . . .	67 12
Meat, 49 25	Clothing, 30 00		

No. 173.	LABORER, IN MACHINE-SHOP.	<i>Irish.</i>
EARNINGS of father,		\$514
daughter, aged 15,		200
		<hr/> \$714

CONDITION.—Family numbers 6, parents and 4 children from seven to fifteen years of age; three go to school. Have a tenement of 4 rooms, surroundings poor and unclean. House moderately well furnished. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, salt pork or fish, and coffee.
<i>Dinner.</i>	Meat, potatoes, and sometimes cabbage.
<i>Supper.</i>	Bread, butter, gingerbread and tea.

COST OF LIVING,			\$714
Rent, \$182 00	Fish, \$7 87	Dry goods,	\$18 00
Fuel, 39 50	Milk, 12 40	Sundries,	17 04
Groceries, . . . 246 29	Boots and shoes, . . 16 75		
Meat, 82 25	Clothing, 41 90		

No. 174.

LABORER, IN ROLLING-MILL.

Irish.

EARNINGS of father,	\$482
son, aged 13,	170
	<hr/> \$652

CONDITION.—Family numbers 7, parents and 5 children from one to thirteen years of age; two go to school. Live in a tenement of 5 rooms, in a very unhealthy and miserable locality, with very disagreeable surroundings. The apartments are meanly furnished, damp and unclean. Family dresses poorly, and want many of the necessaries of life. Has to buy the cheapest of groceries and provisions in order to keep out of debt.

FOOD.— <i>Breakfast.</i>	Bread, butter, salt pork or fish, warmed potatoes, coffee.
<i>Dinner.</i>	Bread, meat, potatoes, cabbage.
<i>Supper.</i>	Bread, butter and tea.

COST OF LIVING,				\$652	
Rent,	\$144 00	Fish,	\$10 00	Dry goods,	\$15 00
Fuel,	21 00	Milk,	15 80	Sundries,	37 80
Groceries,	237 90	Boots and shoes,	22 00		
Meat,	63 75	Clothing,	34 75		

Skilled.

MILL-OPERATIVES.

35 Families.

No. 175.

DRESSER, IN MILL.

English.

EARNINGS of father,	\$680
daughter, aged 16,	308
	<hr/> \$988

CONDITION.—Family numbers 6, parents and 4 children from three to sixteen years of age; two go to school. Have a tenement of 5 rooms, in a poor locality, and the surroundings unclean and disagreeable. The house is well furnished, and kept very clean. Family dresses well, and is very comfortable considering the locality. Have a sewing-machine. Subscribe for one daily and two weekly papers, beside two magazines. Would like to live in a better place, but cannot find such a house as they can afford to pay for.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat or boiled eggs, cake or pie, and coffee.
<i>Dinner.</i>	Brown and white bread, butter, meat, potatoes, vegetables, pickles, pudding or pie.
<i>Supper.</i>	Bread, butter, cheese or cold meat, crackers, pie and tea.

COST OF LIVING,				\$943
Rent, \$144 00	Fish, \$12 00	Dry goods, \$24 00		
Fuel, 61 75	Milk, 27 72	Books and papers, 21 00		
Groceries, 379 21	Boots and shoes, 41 20	Religion, 14 00		
Meat, 111 17	Clothing, 76 00	Sundries, 35 95		

No. 176.

DRESSER, IN MILL.

English.

EARNINGS of father,	\$714
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CONDITION.—Family numbers 4, parents and 2 children of seven and nine years of age; both go to school. Occupy a tenement of 4 rooms, in a good neighborhood, situated about three-quarters of a mile from the mill; have a small garden attached to the house. The rooms are well furnished, and parlor carpeted. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, cold meat or eggs, tea.
<i>Dinner.</i>	Meat, potatoes, bread, pie or pudding.
<i>Supper.</i>	Bread, butter, cheese, cake, tea.

COST OF LIVING,				\$744	
Rent,	\$132 00	Milk,	\$19 88	Societies,	\$10 00
Fuel,	46 00	Boots and shoes,	18 00	Life-insurance,	18 00
Groceries,	264 70	Clothing,	67 45	Sundries,	21 43
Meat,	82 19	Dry goods,	21 50		
Fish,	14 37	Books and papers,	28 50		

No. 177.	MILL-HAND.	English.
EARNINGS of father,		\$492
son, aged 18,		176
		<hr/> \$668

CONDITION.—Family numbers 5, parents and 3 children from three to thirteen years of age; one goes to school. Live in a tenement of 4 rooms, in a pleasant neighborhood, with agreeable surroundings, also have plenty of yard-room. The apartments are moderately well furnished. Family dresses passably well.

FOOD.—*Breakfast.* Bread, butter, cold meat, remains left from dinner.
Dinner. Bread, meat, potatoes, sometimes pie.
Supper. Bread, butter and tea.

COST OF LIVING,				\$668
Rent, \$60 00	Fish, \$10 02	Dry goods,		\$19 50
Fuel, 43 50	Milk, 25 14	Papers,		6 00
Groceries, . . . 326 61	Boots and shoes, . . 20 00	Sundries,		14 37
Meat, 88 86	Clothing, 53 40			

No. 178.	MILL-HAND.	Irish.
EARNINGS of father,		\$498
son, aged 14,		238
		<hr/> \$736

CONDITION.—Family numbers 6, parents and 4 children from two to fourteen years of age; two go to school. Have a tenement of 4 rooms, well situated, and with good surroundings. The rooms are well furnished, and convenient. Family dresses well, and has money in savings bank.

FOOD.—*Breakfast.* Bread, butter, corned meat or fish and coffee.
Dinner. Meat, potatoes, sometimes vegetables and bread.
Supper. Bread, butter, what is left from dinner, gingerbread, tea.

COST OF LIVING,				\$716
Rent, \$108 00	Fish, \$14 20	Dry goods,		\$36 00
Fuel, 52 50	Milk, 20 06	Papers,		4 00
Groceries, . . . 286 40	Boots and shoes, . . 19 60	Sundries,		26 12
Meat, 80 10	Clothing, 60 00			

No. 179.	SECTION-HAND, IN MILL.	American.
EARNINGS of father,		\$693
son, aged 16,		304
		<hr/> \$997

CONDITION.—Family numbers 5, parents and 3 children from five to sixteen years of age; two go to school. Occupy a tenement of 6 rooms, in a healthy locality, with good surroundings. The house is well furnished, and rooms carpeted. Have a sewing-machine. Family dresses well and attends church. Have money in the savings bank.

FOOD.—*Breakfast.* Hot biscuit, butter, bread, eggs, ham or cold meat, cake, tea.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, tea.
Supper. Bread, butter, sauce, sometimes fish, cheese, pie, cake, tea.

COST OF LIVING,				\$995
Rent, \$120 00	Milk, \$19 70	Religion,		\$14 00
Fuel, 52 00	Boots and shoes, . . 33 50	Books and papers, . .		8 50
Groceries, . . . 346 75	Clothing, 168 00	Sundries,		42 65
Meat, 78 90	Dry goods, 36 00			
Fish, 15 00	Societies, 10 00			

No. 180.

SECTION-HAND, IN MILL.

American.

EARNINGS of father, \$620

CONDITION.—Family numbers 3, parents and 1 child of three years of age. Live in a tenement of 4 rooms, in a pleasant locality, with agreeable surroundings. The apartments are well furnished and carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Hot biscuit, butter, cold meat or remains left from dinner, gingerbread and tea.

Dinner. Bread, butter, meat, potatoes, vegetables, pie, tea.

Supper. Bread, butter, cheese, cake and tea. Baked beans Sunday morning.

COST OF LIVING, \$600

Rent, \$96 00	Milk, \$10 62	Societies, \$5 00
Fuel, 42 00	Boots and shoes, . . 17 00	Religion, 14 00
Groceries, 239 00	Clothing, 49 00	Sundries, 14 23
Meat, 78 30	Dry goods, 20 00	
Fish, 5 25	Papers, 8 00	

No. 181.

SECTION-HAND, IN MILL.

English.

EARNINGS of father, \$520
 daughter, aged 16, 278
 \$798

CONDITION.—Family numbers 5, parents and 3 children from seven to sixteen years of age; two go to school. Have a tenement of 5 rooms, well situated, and with good surroundings. The rooms are well furnished. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, gingerbread and coffee.

Dinner. Bread, butter, meat, potatoes, vegetables and pudding.

Supper. Bread, butter, cheese or sauce, cake and tea.

COST OF LIVING, \$775

Rent, \$60 00	Milk, \$23 35	Books and papers, . . \$21 00
Fuel, 59 50	Boots and shoes, . . 24 00	Sundries, 30 70
Groceries, 361 45	Clothing, 62 00	
Meat, 97 00	Dry goods, 36 00	

No. 182.

SECTION-HAND, IN MILL.

English.

EARNINGS of father, \$630
 daughter, aged 17, 380
 \$1,010

CONDITION.—Family numbers 5, parents and 3 children from eight to seventeen years of age; two go to school. Occupy a tenement of 5 rooms, in a good locality, with pleasant and healthy surroundings. The house is well furnished, and parlor and two bedrooms carpeted. Have sewing and wringing machines. Family dresses and appears very respectably. Have money in savings bank.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, sometimes ham and eggs, cake or pie, tea and coffee.

Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pudding or pie, tea.

Supper. Bread and butter, cheese, sauce, pie, tea.

COST OF LIVING, \$957

Rent, \$108 00	Fish, \$9 00	Dry goods, \$52 00
Fuel, 65 00	Milk, 23 40	Societies, 14 00
Groceries, 299 60	Boots and shoes, . . 43 00	Books and papers, . . 16 00
Meat, 106 72	Clothing, 139 00	Sundries, 76 28

No. 183.	SECTION-HAND, IN MILL.	English.
EARNINGS of father,		\$800
daughter, aged 15,		220
		<hr/> \$330

CONDITION.—Family numbers 5, parents and 3 children from three to fifteen years of age; one goes to school. Live in a tenement of 5 rooms, in a pleasant neighborhood, with good surroundings. The apartments are well furnished, and parlor carpeted. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, cold meat or eggs, gingerbread and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pie.
Supper. Bread, butter, fish or cheese, cake and tea. Have baked beans Sunday morning.

COST OF LIVING,		\$708
Rent, \$120 00	Milk, \$23 80	Societies, \$3 00
Fuel, 49 50	Boots and shoes, . . 26 30	Religion, 14 00
Groceries, . . . 323 80	Clothing, 68 00	Sundries, 22 40
Meat, 96 16	Dry goods, 17 40	
Fish, 8 48	Papers, 9 00	

No. 184.	SECTION-HAND, IN MILL.	English.
EARNINGS of husband,		\$657
wife,		300
		<hr/> \$957

CONDITION.—Family numbers 2; both work in the mill. Board in a private boarding-house, and have a spare room for a sitting-room, which they have furnished very nicely. They dress well and attend church. Board is good; meat three times per day. They are comfortably situated, and saving money.

COST OF LIVING,		\$741
Board, \$520 00	Clothing, \$51 65	Religion, \$10 00
Fuel, 7 00	Dry goods, 14 00	Books and papers, . . 22 00
Boots and shoes, . . 14 80	Societies, 12 00	Sundries, 30 55

No. 185.	SECTION-HAND, IN MILL.	English.
EARNINGS of father,		\$584 80
wife,		192 00
		<hr/> \$776 80

CONDITION.—Family numbers 3, parents and 1 child of four years of age. Occupy a tenement of 4 rooms, in a pleasant part of the city, with neat surroundings. The house is convenient and comfortable; the sitting-room and bedrooms are carpeted. Have sewing and wringing machines. Family seems healthy and dresses well; they attend church; the father belongs to several societies. Has done well the last two years, as the mother works in the mill about six months in the year, and can therefore save money.

FOOD.—*Breakfast.* Graham and white bread, butter, cold meat, potatoes, cake, pie, tea.
Dinner. Meat of some kind every day, potatoes, vegetables, bread, butter, pudding and tea.
Supper. Bread, butter, sometimes fresh fish, preserves, cheese, cake, pie, tea.

COST OF LIVING,		\$643 90
Rent, \$108 00	Milk, \$14 60	Societies, \$18 00
Fuel, 33 75	Clothing, 90 75	Magazines and pa- pers, 6 00
Groceries, . . . 229 40	Boots and shoes, . . 19 50	Sundries, 24 00
Meat, 54 90	Dry goods, 20 00	
Fish, 12 00	Religion, 20 00	

No. 186.	SECTION-HAND, IN MILL.				English.						
EARNINGS of father,	.	.	.	.	\$800		
son, aged 14,	.	.	.	.	196		
					<hr/> \$796						
CONDITION. —Family numbers 5, parents and 3 children from six to fourteen years of age; two go to school. Live in a tenement of 4 rooms, in a good locality, with pleasant surroundings. The apartments are well furnished, and parlor carpeted. Family dresses well.											
FOOD. — <i>Breakfast.</i>	Bread, butter, cold meat, gingerbread, coffee.										
<i>Dinner.</i>	Bread, meat, potatoes, vegetables, pickles, pie or pudding.										
<i>Supper.</i>	Bread, butter, fish or cheese, tea.										
COST OF LIVING,	.	.	.	.	\$765 14		
Rent,	.	.	.	\$96 00	Fish,	.	.	\$8 00	Dry goods,	.	\$18 90
Fuel,	.	.	44 00	Milk,	.	.	13 80	Books and papers,	.	22 00	
Groceries,	.	.	327 49	Boots and shoes,	.	.	26 00	Societies,	.	8 00	
Meat,	.	.	90 45	Clothing,	.	.	79 50	Sundries,	.	31 00	

No. 187.	SECTION-HAND, IN MILL.			English.	
EARNINGS of father, \$668					
CONDITION. —Family numbers 4, parents and 2 children of three and six years of age; one goes to school. Live in a tenement of 5 rooms, well situated in a good and healthy neighborhood, and very convenient to work. The apartments are well furnished. Family dresses well and attends church. Has some money in savings bank.					
FOOD. — <i>Breakfast.</i> Bread, butter, sometimes meat, eggs, gingerbread or cookies and tea.					
<i>Dinner.</i> Bread, butter, meat, potatoes, vegetables, pie or pudding.					
<i>Supper.</i> Bread, butter, cold meat or cheese, cake, tea.					
COST OF LIVING, \$623					
Rent,	\$84 00	Milk,	\$26 82	Papers,	\$4 00
Fuel,	89 70	Boots and shoes,	29 40	Religion,	10 00
Groceries,	229 72	Clothing,	43 50	Sundries,	46 37
Meat,	87 49	Dry goods,	22 00		

No. 188.	SECTION-HAND, IN MILL.		English.
EARNINGS of father,	.	.	\$600
son, aged 15,	.	.	272
			<hr/> \$872
CONDITION.—Family numbers 6, parents and 4 children from five to fifteen years of age; three go to school. Occupy a tenement of 6 rooms, situated near the mill, with fair surroundings. House is well furnished, and parlor carpeted. Family dresses well.			
FOOD.—Breakfast.	Bread, butter, meat or eggs, gingerbread, coffee.		
Dinner.	Bread, butter, meat, potatoes, vegetables, pickles, pudding or pie.		
Supper.	Bread, butter, cheese or fish, cake, tea.		
COST OF LIVING, .	.	.	\$858
Rent, . . .	\$96 00	Fish, . . .	\$11 75
Fuel, . . .	50 00	Dry goods, . . .	\$33 00
Groceries, . . .	383 42	Milk, . . .	27 44
Meat, . . .	102 60	Books and papers, . . .	14 00
		Boots and shoes, . . .	30 00
		Sundries, . . .	39 79
		Clothing, . . .	56 00

No. 189.	SECTION-HAND, IN MILL.	German.
EARNINGS of father,		\$553
daughter, aged 16,		271
son, aged 14,		190
		<hr/> \$1,013

CONDITION.—Family numbers 7, parents and 5 children from eight to sixteen years of age; two go to school. Have a tenement of 6 rooms, in a pleasant locality, and with good surroundings. The house is well furnished; have a cottage-organ. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat, gingerbread and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pie.
Supper. Bread, butter, cake and tea.

COST OF LIVING,					\$306 71
Rent, \$180 00	Fish, \$7 48	Dry goods,			\$26 67
Fuel, 54 00	Milk, 19 60	Societies,			9 00
Groceries, . . . 427 93	Boots and shoes, . . 39 80	Papers,			12 00
Meat, 121 83	Clothing, 87 00	Sundries,			13 90

No. 190.	SPINNER.	English.
EARNINGS of father,		\$621
son, aged 12,		106
		<hr/> \$727

CONDITION.—Family numbers 4, parents and 2 children of seven and twelve years of age; one goes to school. Live in a tenement of 4 rooms, in a good locality, but with unpleasant surroundings; drainage and other sanitary arrangements very imperfect. The apartments are well furnished, and kept neat and clean. Family dresses well. Has money in savings bank. Belongs to a dividing store, and buys all goods from 10 to 20 per cent. cheaper.

FOOD.—*Breakfast.* Bread, butter, cold meat, coffee.
Dinner. Bread, butter, meat, potatoes, vegetables in season, pudding and tea.
Supper. Bread, butter, fish or cheese, cake and tea.

COST OF LIVING,					\$488
Rent, \$96 00	Fish, \$11 00	Dry goods,			\$42 00
Fuel, 40 00	Milk, 20 20	Books and papers, . .			21 00
Groceries, . . . 196 89	Boots and shoes, . . 33 40	Sundries,			63 61
Meat, 60 40	Clothing, 80 00				

No. 191.	SPINNER.	English.
EARNINGS of father,		\$623
son, aged 13,		148
		<hr/> \$776

CONDITION.—Family numbers 4, parents and 2 children of six and thirteen years of age; one goes to school. Occupy a tenement of 4 rooms, in a very good neighborhood, with clean and healthy surroundings. The house is well furnished, with parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake, coffee.
Dinner. Meat, potatoes, vegetables, bread, pie.
Supper. Bread, butter, cheese, tea.

COST OF LIVING,					\$714 21
Rent, \$120 00	Milk, \$30 24	Papers,			\$5 50
Fuel, 89 65	Boots and shoes, . . 23 75	Societies,			9 00
Groceries, . . . 297 41	Clothing, 60 00	Religion,			13 00
Meat, 101 79	Dry goods, 16 28	Sundries,			8 80

EARNINGS of father,	\$570
son, aged 14,	300
	<hr/> \$870

CONDITION.—Family numbers 5, parents and 3 children from two to fourteen years of age; one goes to school. Have a tenement of 4 rooms, well situated, and with fair surroundings and ample yard-room, kept in good order. The rooms are fairly furnished, and the parlor carpeted. Family is in good health; dresses well. The father would not be able to support the family without the assistance of the son; can afford but few luxuries as it is.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake or pie, and coffee.

Dinner. Bread, butter, meat, potatoes, vegetables in season, pie or pudding.

Supper. Bread, butter, sometimes toasted cheese, sometimes fish, sauce, cake and tea. Beans every Saturday.

COST OF LIVING,				\$870	
Rent,	\$96 00	Milk,	\$32 45	Books and papers, .	\$10 50
Fuel,	53 25	Boots and shoes,	27 90	Furniture,	43 00
Groceries,	309 89	Clothing,	120 00	Sundries, .	47 56
Meat,	91 70	Dry goods,	19 75		
Fish,	6 00	Societies,	12 00		

No. 193.

SPINNER.

English.

EARNINGS of father,	\$525
son, aged 13,	197
	<hr/> \$723

CONDITION.—Family numbers 6, parents and 4 children from two to thirteen years of age; one goes to school. Live in a tenement of 4 rooms, pleasantly situated, with good surroundings. The apartments are well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, eggs, gingerbread, coffee.

Dinner. Bread, meat, potatoes, pie.

Supper. Bread, butter, fish or cheese, tea.

COST OF LIVING,				\$723
Rent, \$96 00	Fish,	\$4 86	Dry goods,	\$17 60
Fuel, 52 00	Milk,	24 48	Papers,	4 50
Groceries, . . . 344 30	Boots and shoes, . .	28 58	Sundries,	13 38
Meat, 93 50	Clothing,	43 80		

No. 194.

SPINNER.

English.

EARNINGS of father,	\$537
son, aged 14,	180
daughter, aged 12,	150
	<hr/> \$867

CONDITION.—Family numbers 7, parents and 5 children from two to fourteen years of age; two go to school. Have a tenement of 5 good and convenient rooms, but the surroundings are very unclean, and some parts actually covered with filth. It is a disgrace to the owners to have property in such a condition; it cannot fail to be unhealthy. The house is well furnished, and one room carpeted. Family is warmly and comfortably dressed. Without the assistance of the children's work the family could not be well cared for; as it is, cannot spend much.

FOOD.—*Breakfast.* Bread, butter, cold meat or eggs, cake and coffee.

Dinner. Bread, butter, meat, potatoes, vegetables, pudding or pie, sometimes soup.

Supper. Bread, butter, cheese, sausage or sauce, cake and tea. Sometimes, for a change, they have beefsteak pudding or potato pie for dinner; and cook cheese and use it instead of butter for supper.

COST OF LIVING,				\$866 64	
Rent,	\$96 00	Milk,	\$27 84	Books and papers, . .	\$9 00
Fuel,	51 00	Boots and shoes, . .	37 75	Sundries,	15 00
Groceries, . .	375 80	Clothing,	90 00		
Meat,	80 75	Dry goods,	23 50		

No. 195.	SPINNER.	<i>Irish.</i>
EARNINGS of husband,		\$5 00
wife,		300
		<u>\$5 300</u>

CONDITION.—Family numbers 2; both work. Board in a private family; have a spare room for sitting-room, which is well furnished and carpeted. They dress well and are comfortably well off; save money. The board is good; meat twice per day.

COST OF LIVING,				\$641
Board, \$416 00	Clothing, \$60 00	Charity,		\$25 00
Fuel and light, 15 00	Dry goods, 23 00	Sundries, including		
Boots and shoes, 19 00	Papers, 8 00	recreation,	75 00	

No. 196.	SPINNER.	<i>Irish.</i>
EARNINGS of father,		\$5 40
son, aged 12,		150
		<u>\$5 550</u>

CONDITION.—Family numbers 4, parents and 2 children of seven and twelve years of age; one goes to school. Live in a tenement of 4 rooms, in a good locality, with pleasant surroundings. The apartments are well furnished. Family dresses well.

FOOD. *Breakfast.* Bread, butter, what was left from dinner, gingerbread, coffee.
Dinner. Bread, butter, meat, potatoes, cabbage, pie.
Supper. Bread, butter, fish or cheese, and tea.

COST OF LIVING,				\$384
Rent, \$96 00	Fish, \$6 00	Dry goods,		\$14 25
Fuel, 39 75	Milk, 15 24	Papers,		6 00
Groceries, 319 83	Boots and shoes, 22 44	Societies,		12 00
Meat, 81 20	Clothing, 48 00	Sundries,		23 20

No. 197.	SPINNER.	<i>Irish.</i>
EARNINGS of father,		\$5 56
daughter, aged 17,		340
son, aged 13,		163
		<u>\$1,064</u>

CONDITION.—Family numbers 7, parents and 5 children from one to seventeen years of age; two go to school. Occupy a tenement of 6 rooms, convenient to the mill, with good and pleasant surroundings. House is well furnished, but only one room carpeted. Family dresses well and has money in savings bank.

FOOD.—*Breakfast.* Bread, butter, meat or fish, gingerbread, coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pie.
Supper. Bread, butter, cheese or cold meat left from dinner, tea.

COST OF LIVING,				\$900 20
Rent, \$144 00	Fish, \$24 00	Dry goods,		\$24 00
Fuel, 56 00	Milk, 23 80	Books and papers,		14 00
Groceries, 398 96	Boots and shoes, 33 40	Societies,		6 00
Meat, 116 17	Clothing, 91 95	Sundries,		61 95

No. 198.	SPARE-HAND, IN MILL.	German.
EARNINGS of father,		\$459
son, aged 15,		300
		<hr/> \$759

CONDITION.—Family numbers 5, parents and 3 children from seven to fifteen years of age; two go to school. Have a tenement of 5 rooms, well situated, and with clean and healthy surroundings. The rooms are moderately well furnished, and clean. Family is economical in dress, but looks respectable and well. It takes all the earnings to support the family.

FOOD.—*Breakfast.* Bread, butter, meat, potatoes, cake and coffee.
Dinner. Bread, meat, potatoes, sometimes vegetables, pickles and pie.
Supper. Bread, butter, corned meat or fish, cheese, gingerbread and tea.

COST OF LIVING,				\$759	
Rent,	\$84 00	Fish,	\$16 30	Dry goods,	\$16 00
Fuel,	50 00	Milk,	13 44	Societies,	5 00
Groceries,	318 43	Boots and shoes,	31 75	Books and papers,	6 00
Meat,	75 97	Clothing,	64 50	Sundries,	77 61

No. 199.	SLASHER, IN MILL.	Scotch.
EARNINGS of father,		\$720
son, aged 15,		240
		<hr/> \$960

CONDITION.—Family numbers 6, parents and 4 children from two to fifteen years of age; two go to school. Live in a tenement of 5 rooms, in a fair locality; could be made more healthy, but owing to an absence of drains to carry off sink-water, it is allowed to run into the yard, causing the air to be very impure. The apartments are well furnished, and one is carpeted. Have a sewing-machine. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, fresh meat or eggs, cake and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding.
Supper. Bread, butter, fish or cheese, gingerbread and tea.

COST OF LIVING,				\$846	
Rent,	\$108 00	Fish,	\$19 60	Dry goods,	\$36 50
Fuel,	47 75	Milk,	27 98	Papers,	9 00
Groceries,	299 06	Boots and shoes,	28 68	Societies,	10 00
Meat,	87 74	Clothing,	100 00	Sundries,	71 60

No. 200.	WEAVER.	English.
EARNINGS of father,		\$524
daughter, aged 16,		448
		<hr/> \$972

CONDITION.—Family numbers 6, parents and 4 children from four to sixteen years of age. Occupy a tenement of 6 rooms, situated near the mill, with good surroundings and sanitary arrangements. The house is well furnished, and no dirt is allowed to accumulate in or near the house, as the condition of rental is, that occupants keep the premises clean. Family dresses well and attends church. The father can save money with the assistance of family, but the work is very hard and wearing. Weavers in Fall River run too many looms, which exhausts their strength, and leaves them without energy for anything else after the work is done.

FOOD.—*Breakfast.* Bread and butter, steak or eggs, cake, coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pudding or pie, and tea.
Supper. Bread, butter, cheese, sauce or fish, gingerbread, tea.

COST OF LIVING,				\$940	
Rent,	\$132 00	Fish,	\$12 00	Dry goods,	\$24 00
Fuel,	64 00	Milk,	37 20	Papers,	7 00
Groceries, . .	382 40	Boots and shoes,	28 75	Religion,	12 00
Meat,	111 22	Clothing, . . .	108 00	Sundries,	21 43

No. 201.	WEAVER.	English.
EARNINGS of father,		\$588
son, aged 15,		230
		<hr/> \$818

CONDITION.—Family numbers 6, parents and 4 children from three to fifteen years of age; two go to school. Have a tenement of 4 rooms in a four-tenement block, poorly situated, in a poor neighborhood. The house is built in a style peculiar to Fall River, having neither parlor nor sitting-room; simply a kitchen and 3 bedrooms, with a small room for closet and sink. The house is moderately well furnished. The privies are exposed to the street. Family dresses well on Sunday, but very carelessly during the week.

FOOD.— <i>Breakfast.</i>	Bread, butter, eggs or meat, gingerbread and coffee.
<i>Dinner.</i>	Meat, potatoes, sometimes vegetables, pickles and pie.
<i>Supper.</i>	Bread, butter, cheese or cold meat, cake and tea.

COST OF LIVING,			\$768
Rent, \$120 00	Milk, \$36 40	Papers,	\$4 00
Fuel, 51 00	Boots and shoes, 21 50	Sundries,	20 40
Groceries, 311 09	Clothing, 50 00		
Meat, 122 61	Dry goods, 30 00		

No. 202.	WEAVER.	English.
EARNINGS of father,		\$543
wife,		301
		<hr/> \$834

CONDITION.—Family numbers 5, parents, grandmother and 2 children of six and ten years of age; both go to school. Live in a tenement of 4 rooms, with good surroundings. The apartments are well furnished. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat or eggs, coffee.
<i>Dinner.</i>	Bread, meat, potatoes, sometimes vegetables, pie and tea.
<i>Supper.</i>	Bread, butter, cheese, gingerbread and tea.

COST OF LIVING,			\$794 50
Rent, \$108 00	Milk, \$31 24	Grandmother,	\$60 00
Fuel, 49 85	Boots and shoes, 23 50	Papers,	14 00
Groceries, 306 22	Clothing, 44 80	Societies,	9 00
Meat, 117 39	Dry goods, 14 00	Sundries,	16 50

No. 203.	WEAVER.	English.
EARNINGS of father,		\$530
son, aged 16,		452
		<hr/> \$982

CONDITION.—Family numbers 7, parents and 5 children from one to sixteen years of age; two go to school. Occupy a tenement of 6 rooms, in a good locality, with small garden attached. The rooms are well furnished, and the parlor is carpeted. Have sewing and wringing machines. Family dresses well, and is economical. Have money in savings bank; can save some, but have to work hard to do so.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat, cake or pie, coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pickles, pudding or pie.
<i>Supper.</i>	Bread, butter, cold meat or cheese, cake, tea.

COST OF LIVING,			\$928
Rent, \$108 00	Milk, \$38 62	Charity,	\$10 00
Fuel, 43 80	Boots and shoes, 41 20	Recreation,	36 00
Groceries, 368 90	Clothing, 87 00	Sundries,	33 40
Meat, 97 40	Dry goods, 41 00		
Fish, 8 60	Papers, 9 00		

No. 204.	WEAVER.	English.
EARNINGS of father,		\$508
son, aged 15,		300
		<hr/> \$806

CONDITION.—Family numbers 6, parents and 4 children from two to fifteen years of age; two go to school. Have a tenement of 6 rooms, well situated, and with good and healthy surroundings. The house is well furnished and kept clean; the rooms are ventilated by means of registers in the chimneys. No refuse is allowed to accumulate in the yard, but it is kept clean and in good order. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, pie and coffee.
Dinner. Bread, graham bread, butter, meat, potatoes, vegetables three times per week, pickles, pudding or pie, and tea.
Supper. Bread, butter, cheese or cold meat, cake and tea. Baked beans on Sun. day morning.

COST OF LIVING,				\$806
Rent, . . . \$108 00	Milk,	\$20 44	Papers,	\$6 00
Fuel, 42 00	Boots and shoes,	29 00	Sundries,	42 50
Groceries, . . . 350 25	Clothing,	81 75		
Meat, 101 86	Dry goods,	15 20		

No. 205.	WEAVER.	English.
EARNINGS of father,		\$506 00
wife,		109 00
son, aged 13,		122 40
		<hr/> \$737 40

CONDITION.—Family numbers 5, parents and 3 children from three to thirteen years of age; one child only goes to school. Occupy a tenement of 4 rooms, with very poor surroundings, but convenient indoors. Family is very fond of flowers and has a great variety. The children are well dressed, enjoy good health and attend church. The father prefers remaining at home or enjoying fresh air Sundays, as it is the only day he has for rest and recreation; while he was sick last year, his wife worked for the weavers, and earned \$100.

FOOD.—*Breakfast.* Bread and butter, cheese or meat, or eggs with warmed potatoes, cake, coffee.

Dinner. Meat, potatoes, vegetables two or three times a week when in season, pie or pudding, sometimes potatoe-pie and beefsteak, soup or pudding, and water.

Supper. Bread, butter, sometimes fish instead of meat, gingerbread or cake, tea.

COST OF LIVING,				\$663 70
Groceries, . . . \$264 75	Meat or fish,	\$72 90	Boots and shoes,	\$19 00
Rent, 96 00	Milk,	19 80	Dry goods,	16 50
Fuel, 30 00	Clothing,	106 00	Sundries,	29 75

No. 206.	WEAVER.	English.
EARNINGS of father,		\$466
son, aged 13,		180
		<hr/> \$646

CONDITION.—Family numbers 5, parents and 3 children from three to thirteen years of age; one goes to school. Occupy a tenement of 5 rooms convenient to mill, with good surroundings. The house is moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat or eggs, cake, tea.

Dinner. Meat, potatoes, vegetables, pickles, bread, pie or pudding.

Supper. Bread, butter, fish or cheese, gingerbread, tea.

COST OF LIVING,				\$646
Rent, \$48 00	Fish,	\$13 00	Dry goods,	\$28 50
Fuel, 40 00	Milk,	23 24	Books and papers,	8 00
Groceries, . . . 238 67	Boots and shoes,	31 60	Sundries,	50 40
Meat, 97 50	Clothing,	67 00		

No. 207.	WEAVER.		English.
EARNINGS of father,			\$500
CONDITION.—Family numbers 4, parents and 2 children of two and four years of age. Have a tenement of 4 rooms, well situated and with good surroundings. The rooms are moderately well furnished and kept clean. Family dresses well.			
FOOD.— <i>Breakfast.</i>	Bread, butter, cold meat, gingerbread and coffee.		
<i>Dinner.</i>	Meat, potatoes, sometimes vegetables, bread and pudding.		
<i>Supper.</i>	Bread, butter, cheese, cake or pie, and tea.		
COST OF LIVING,			\$500
Rent,	\$40 00	Milk,	\$17 76
Fuel,	32 50	Papers,	\$3 00
Groceries,	198 29	Boots and shoes,	22 15
Meat,	82 25	Sundries,	55 05
		Clothing,	41 00
		Dry goods,	16 00

No. 208.	WEAVER.		German.
EARNINGS of father,	.	.	\$440
wife,	.	.	333
			<hr/> \$773
CONDITION.—Family numbers 3, parents and 1 child, who goes to school. Live in a tenement of 4 rooms, well situated, with good surroundings. The apartments are well furnished and carpeted. Family dresses well.			
FOOD.— <i>Breakfast.</i>	Bread, butter, meat, cake, tea.		
<i>Dinner.</i>	Bread, butter, meat, potatoes, pie.		
<i>Supper.</i>	Bread, butter, fish or cheese, tea.		
COST OF LIVING,	.	.	\$775 20
Rent,	\$132 00	Milk,	\$30 25
Fuel,	42 85	Boots and shoes,	20 50
Groceries,	361 29	Clothing,	39 00
Meat,	76 48	Dry goods,	23 80
Fish,	7 20	Papers,	10 00
		Societies,	\$8 00
		Care of house,	33 00
		Sundries,	9 33

No. 209.	WEAVER.		German.
EARNINGS of father,	.	.	\$450
son, aged 13,	.	.	142
			\$592
CONDITION.—Family numbers 6, parents and 4 children from one to thirteen years of age; one goes to school. Occupy a tenement of 5 rooms, in a good locality, with a small garden attached to the house. The rooms are poorly furnished, but kept neat and clean. Family dresses moderately well. The father says it is impossible to provide for his family with his earnings only.			
FOOD.— <i>Breakfast.</i> Bread, butter, meat, coffee.			
	<i>Dinner.</i> Meat, potatoes, vegetables, sometimes pie.		
	<i>Supper.</i> Bread, butter and tea.		
COST OF LIVING, \$592			
Rent,	\$96 00	Meat, \$30 40	Clothing, \$22 00
Fuel,	47 80	Milk, 33 00	Dry goods, 16 00
Groceries,	209 39	Boots and shoes, 26 80	Sundries, \$ 11

Unskilled.	MILL OPERATIVES.	42 Families.
No. 210.	LABORER, IN MILL.	English.
EARNINGS of father,		\$437
daughter, aged 17,		261
son, aged 14,		177
		<hr/> \$875

CONDITION.—Family numbers 6, parents and 4 children from three to seventeen years of age; one goes to school. Occupy a tenement of 5 rooms, in a good locality. House moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat and what was left from dinner, coffee.

Dinner. Meat, potatoes, bread, pie.

Supper. Bread, butter, gingerbread, tea.

COST OF LIVING,			\$823 34
Rent, \$120 00	Milk,	\$15 82	Societies, \$6 00
Fuel, 49 50	Boots and shoes,	29 20	Religion, 12 00
Groceries, . . . 300 19	Clothing,	50 75	Sundries, 23 35
Meat, 96 32	Dry goods,	16 00	
Fish, 6 21	Papers,	8 00	

No. 211.	LABORER, IN MILL.	English.
EARNINGS of father,		\$390
daughter, aged 16,		276
		<hr/> \$666

CONDITION.—Family numbers 4, parents and 2 children, twelve and sixteen years of age; one goes to school. Occupy a tenement of 5 rooms, with good surroundings. The house is well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat, tea.

Dinner. Bread, butter, meat, potatoes, vegetables, pie.

Supper. Bread, butter, cake, tea.

COST OF LIVING,			\$666
Rent, \$66 00	Milk,	\$16 18	Papers, \$4 00
Fuel, 42 00	Boots and shoes,	18 00	Sundries, 26 60
Groceries, . . . 332 60	Clothing,	53 00	
Meat, 30 33	Dry goods,	27 00	

No. 212.	LABORER, IN MILL.	English.
EARNINGS of father,		\$395 20
daughter, aged 12,		184 75
		<hr/> \$579 95

CONDITION.—Family numbers 7, parents and 5 children from nine months to twelve years of age; two go to school. Have a tenement of 5 rooms, situated in the worst part of the city. The house is out of repair, some of the rooms leak, and the drainage from the sink is choked up, causing a stench which is almost unbearable in wet weather. The house is barely furnished and the family scantily dressed. The mother and children look pale and unhealthy, and in fact, are so; for it cost more last year for sickness than it would have paid the difference for a decent house. Family is in debt, and it costs more to live, from that cause, as they are nearly always behind with the store-bill. Another one of the children will be able to work this summer, so the family is in hopes of doing better. Three of the family attend church.

FOOD.—*Breakfast.* Bread, butter, sometimes but not often, have eggs, and tea.

Dinner. Meat, potatoes, bread, sometimes pie or pudding. Have the cheapest meat, or they would not be able to have it every day.

Supper. Bread, butter, cake and tea, sometimes toasted cheese instead of butter. The younger children have oat or Indian meal porridge for breakfast.

COST OF LIVING,			\$807 10
Rent, \$66 00	Milk,	\$13 60	Physician and med- icine, \$33 75
Fuel, 30 00	Boots and shoes,	22 00	Sundries, 18 00
Groceries, . . . 319 75	Clothing,	30 00	
Meat, 42 00	Dry goods,	9 00	

No. 213.	LABORER, IN MILL.	English.
EARNINGS of father,		\$434
son, aged 15,		286
son, aged 13,		200
		<hr/> \$920

CONDITION.—Family numbers 6, parents and 4 children from two to fifteen years of age; one goes to school. Occupy a tenement of 5 rooms, in a good locality, with pleasant surroundings. The house is moderately well furnished, with one room carpeted. There was sickness in the family last summer, which consumed the few funds they had saved.

FOOD.—*Breakfast.* Bread, butter, meat, cake, tea.
Dinner. Meat, potatoes, vegetables, bread, pie or pudding.
Supper. Bread, butter, fish or cheese, pie, tea. Beans every Saturday night.

COST OF LIVING,		\$919
Rent, \$84 00	Fish, \$13 20	Dry goods, . . . \$36 60
Fuel, 59 50	Milk, 31 42	Societies, . . . 3 00
Groceries, . . 371 10	Boots and shoes, . 41 80	Books and papers, . 9 00
Meat, 98 27	Clothing, . . . 87 00	Sundries, . . . 70 21

No. 214.	LABORER, IN MILL.	English.
EARNINGS of father,		\$402
daughter, aged 16,		312
		<hr/> \$714

CONDITION.—Family numbers 4, parents and 2 children of twelve and sixteen years of age; one goes to school. Have a tenement of 5 rooms, well situated in a pleasant neighborhood, and with good surroundings. The rooms are well furnished, and the parlor carpeted. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat, gingerbread and tea.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles and pie.
Supper. Bread, butter, cheese, cake and tea.

COST OF LIVING,		\$714
Rent, \$96 00	Fish, \$11 00	Dry goods, . . . \$19 30
Fuel, 45 00	Milk, 19 30	Papers, 10 00
Groceries, . . 238 25	Boots and shoes, . 28 50	Religion, . . . 19 00
Meat, 97 15	Clothing, . . . 114 00	Sundries, . . . 27 00

No. 215.	LABORER, IN MILL.	English.
EARNINGS of father,		\$370
daughter, aged 15,		269
		<hr/> \$639

CONDITION.—Family numbers 5, parents and 3 children from eight to fifteen years of age; two go to school. Occupy a tenement of 4 rooms, with good and pleasant surroundings. House is moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, sometimes eggs, or what was left from dinner, coffee.
Dinner. Meat, potatoes, vegetables in season, bread, pie.
Supper. Bread, butter, sometimes cheese, cake, tea.

COST OF LIVING,		\$619
Rent, \$66 00	Milk, \$11 26	Papers, \$3 60
Fuel, 39 50	Boots and shoes, . 14 00	Sundries, . . . 20 24
Groceries, . . 308 50	Clothing, . . . 37 50	
Meat, 86 90	Dry goods, . . . 17 00	

No. 216.	LABORER, IN MILL.	English.
EARNINGS of father,		\$347
daughter, aged 17,		226
son, aged 13,		175
		<hr/> \$748

CONDITION.—Family numbers 6, parents and 4 children from four to seventeen years of age; one goes to school. Have a tenement of 5 rooms, well situated, and with good surroundings. The rooms are well furnished and the parlor is carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, what was left from dinner, gingerbread and coffee.
Dinner. Meat, potatoes, sometimes vegetables, bread and pie.
Supper. Bread, butter, cheese and tea.

COST OF LIVING,		\$748
Rent, \$100 00	Fish, \$6 00	Dry goods, . . . \$16 80
Fuel, 46 75	Milk, 14 70	Papers, 6 00
Groceries, . . 359 87	Boots and shoes, . 19 50	Sundries, . . . 26 08
Meat, 94 30	Clothing, 58 00	

No. 217.	LABORER, IN MILL.	F. Canadian.
EARNINGS of father,		\$360
daughter, aged 14,		208
son, aged 12,		128
		<hr/> \$696

CONDITION.—Family numbers 6, parents and 4 children from five to fourteen years of age; one goes to school. Occupy a tenement of 5 rooms with pleasant surroundings. The house is moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat, coffee.
Dinner. Meat, potatoes, sometimes soup and vegetables, pie.
Supper. Bread, butter, sauce, tea.

COST OF LIVING,		\$676
Rent, \$43 00	Fish, \$12 00	Dry goods, . . . \$27 00
Fuel, 43 00	Milk, 17 40	Papers, 4 00
Groceries, . . 319 54	Boots and shoes, . 18 00	Religion, 8 00
Meat, 96 36	Clothing, 49 00	Sundries, . . . 33 70

No. 218.	LABORER, IN MILL.	F. Canadian.
EARNINGS of father,		\$420
daughter, aged 16,		334
		<hr/> \$754

CONDITION.—Family numbers 5, parents and 3 children from six to sixteen years of age; two go to school. Have a tenement of 4 rooms, in a good locality, but the surroundings poor and unhealthy. The house is clean, but poorly furnished. The family is in good health, and dresses moderately well.

FOOD.—*Breakfast.* Bread, butter, cold meat, gingerbread and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables and pie.
Supper. Bread, butter, sauce, cake and tea. Have soup once per week.

COST OF LIVING,		\$754
Rent, \$96 00	Fish, \$11 80	Dry goods, . . . \$18 75
Fuel, 43 50	Milk, 27 50	Papers, 4 00
Groceries, . . 329 00	Boots and shoes, . 23 25	Sundries, . . . 47 50
Meat, 91 70	Clothing, 61 00	

No. 219.	LABORER, IN MILL.	F. Canadian.
EARNINGS of father,		\$382
son, aged 10,		190
		<hr/> \$572

CONDITION.—Family numbers 6, parents and 4 children from nine months to ten years of age; one goes to school. Have a tenement of 4 rooms in an eight-tenement block, with one door on the front and none on the back; the locality and surroundings unclean and disagreeable. The privy is within six feet of the building. The inside of the house is as dirty as the surroundings, and very poorly furnished. Family is poor.

FOOD.—*Breakfast.* Pork or salt fish, potatoes, bread and coffee.
Dinner. Meat, potatoes, sometimes vegetables, and bread.
Supper. Bread, butter, sometimes gingerbread, and tea. Fish for dinner, instead of meat, two days in the week.

COST OF LIVING,				\$572
Rent, \$34 00	Fish, \$18 00	Dry goods,	\$11 50	
Fuel, 29 50	Milk, 12 00	Sundries,	53 43	
Groceries, . . . 273 25	Boots and shoes, . . 14 80			
Meat, 47 92	Clothing, 27 00			

No. 220.	LABORER, IN MILL.	F. Canadian.
EARNINGS of father,		\$349
daughter, aged 16,		280
son, aged 12,		122
		<hr/> \$751

CONDITION.—Family numbers 6, parents and 4 children from five to sixteen years of age; two go to school. Occupy a tenement of 4 rooms, situated in a good neighborhood, with agreeable surroundings. The house is well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat and warmed potatoes, gingerbread, coffee.
Dinner. Meat, potatoes, vegetables, pickles, bread.
Supper. Bread, butter, sauce, tea.

COST OF LIVING,				\$736
Rent, \$120 00	Fish, \$9 70	Dry goods,	\$19 00	
Fuel, 40 00	Milk, 23 15	Sundries,	15 00	
Groceries, . . . 334 40	Boots and shoes, . . 26 50			
Meat, 87 25	Clothing, 56 00			

No. 221.	LABORER, IN MILL.	F. Canadian.
EARNINGS of father,		\$443
daughter, aged 14,		226
son, aged 11,		163
		<hr/> \$832

CONDITION.—Family numbers 8, parents and 6 children from two to fourteen years of age; two go to school. Occupy a tenement of 6 rooms, in a poor locality, with unclean and disagreeable surroundings. The house is poorly furnished, but neat, considering the locality. It is strange that people will live in such houses, when, for a few dollars more, they could be made comfortable; it is no saving, as it generally costs more for sickness, caused by living in such places, than extra rent would cost.

FOOD.—*Breakfast.* Bread and butter, meat or eggs, cake, coffee.
Dinner. Meat or fish, potatoes, sometimes vegetables, bread, pie.
Supper. Bread and butter, and what was left from dinner, tea.

COST OF LIVING,				\$836
Rent, \$108 00	Fish, \$18 00	Dry goods,	\$29 50	
Fuel, 47 00	Milk, 26 40	Sundries,	33 73	
Groceries, . . . 376 87	Boots and shoes, . . 36 00			
Meat, 81 25	Clothing, 79 75			

No. 222.

LABORER, IN MILL.

F. Canadian.

EARNINGS of father,	\$410
son, aged 12,	185
	<hr/> \$575

CONDITION.—Family numbers 5, parents and 3 children from one to twelve years of age. Have a tenement of 5 rooms, poorly situated, and the surroundings disagreeable and unhealthy. House poorly furnished and dirty. The clothing of the family is of poor quality and scanty. Have money in the savings bank.

FOOD.—*Breakfast.* Bread, butter, gingerbread and coffee.
Dinner. Meat, potatoes and bread.
Supper. Bread, butter, sometimes fish, and tea.

COST OF LIVING,				\$516	
Rent,	\$66 00	Fish,	\$17 00	Dry goods,	\$23 80
Fuel,	33 20	Milk,	19 68	Sundries,	53 25
Groceries,	216 70	Boots and shoes,	13 00		
Meat,	53 92	Clothing,	19 40		

No. 223.

LABORER, IN MILL.

F. Canadian.

EARNINGS of father,	\$385
son, aged 12,	145
son, aged 10,	120
	<hr/> \$650

CONDITION.—Family numbers 7, parents and 5 children from one to twelve years of age; one child goes to school all the time, and the other two who work, attend the half-time school. Occupy a tenement of 4 rooms in a good locality, with neat surroundings. The house is moderately well furnished, but no carpets. Family dresses poorly, and looks pale and unhealthy, but neat. Tries to keep out of debt, but the father has to work all the time, as well as the children. Lost six days through sickness last year, and had to go without necessary clothing.

FOOD.—*Breakfast.* Bread, butter, sometimes fish, or the remains of the day before, coffee.
Dinner. Meat or fish, potatoes, bread, sometimes pie.
Supper. Bread, butter, gingerbread, molasses, tea.

COST OF LIVING,						\$650
Rent,	\$84 00	Fish,	\$13 50	Dry goods,	\$18 00	
Fuel,	38 75	Milk,	14 80	Sundries,	24 58	
Groceries,	300 00	Boots and shoes,	22 75			
Meat,	54 62	Clothing,	79 00			

No. 224.

LABORER, IN MILL.

F. Canadian.

EARNINGS of father,	\$345
son, aged 14,	140
son, aged 12,	138
	<hr/> \$623

CONDITION.—Family numbers 6, parents and 4 children from three to fourteen years of age; one goes to school. Occupy a tenement of 5 rooms, in a good locality. House is moderately well furnished. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, what is left from dinner, coffee.
Dinner. Meat, potatoes, sometimes vegetables, bread.
Supper. Bread, butter, gingerbread, tea.

COST OF LIVING,				\$623	
Rent,	\$48 00	Fish,	\$14 00	Dry goods,	\$13 50
Fuel,	46 00	Milk,	19 66	Religion,	8 00
Groceries,	\$11 72	Boots and shoes,	24 00	Papers,	4 00
Meat,	75 12	Clothing,	41 00	Sundries,	18 00

No. 226.	LABORER, IN MILL.	F. Canadian.
EARNINGS of father,		\$370
son, aged 12,		142
		<hr/> \$512

CONDITION.—Family numbers 5, parents and 3 children from one and one-half to twelve years of age; one goes to school. Have a tenement of 4 rooms; the locality and surroundings are rather poor. The rooms are poorly furnished, and not neat. Family dresses well on Sunday, but during the week very carelessly.

FOOD.—*Breakfast.* Bread, butter and coffee.
Dinner. Meat or fish, potatoes, sometimes soup, and bread.
Supper. Bread, butter, gingerbread and tea.

COST OF LIVING,				\$537
Rent, \$60 00	Fish, \$12 00	Dry goods,	\$14 50	
Fuel, 39 50	Milk, 11 80	Sundries,	40 24	
Groceries, . . . 260 96	Boots and shoes, . . 12 00			
Meat, 60 00	Clothing, 26 00			

No. 226.	LABORER, IN MILL.	F. Canadian.
EARNINGS of father,		\$402
son, aged 15,		188
		<hr/> \$590

CONDITION.—Family numbers 6, parents and 4 children from three to fifteen years of age; two go to school. Have a tenement of 4 rooms with good surroundings. The house is poorly furnished. Family dresses moderately well.

FOOD.—*Breakfast.* Bread, butter, molasses coffee.
Dinner. Meat, potatoes, sometimes vegetables, bread.
Supper. Bread, butter and tea.

COST OF LIVING,				\$599
Rent, \$60 00	Fish, \$9 00	Dry goods,	\$12 50	
Fuel, 43 00	Milk, 18 00	Sundries,	27 80	
Groceries, . . . 312 70	Boots and shoes, . . 17 50			
Meat, 57 00	Clothing, 33 00			

No. 227.	LABORER, IN MILL.	German.
EARNINGS of father,		\$419
daughter, aged 17,		304
		<hr/> \$723

CONDITION.—Family numbers 6, parents and 4 children from four to seventeen years of age; two go to school. Have a tenement of 5 rooms, well situated, and with good surroundings. The house is moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat and coffee.
Dinner. Meat, potatoes, vegetables, and bread.
Supper. Bread, butter, cheese, gingerbread and tea.

COST OF LIVING,				\$723
Rent, \$84 00	Fish, \$8 00	Dry goods,	\$30 50	
Fuel, 43 00	Milk, 23 20	Papers,	6 00	
Groceries, . . . 361 00	Boots and shoes, . . 25 00	Societies,	5 00	
Meat, 76 30	Clothing, 41 00	Sundries,	29 30	

No. 228.

LABORER, IN MILL.

EARNINGS of father,	
son, aged 16,	
son, aged 12,	

CONDITION.—Family numbers 6, parents and 4 children from two to sixteen goes to school. Occupy a tenement of 5 rooms, with good surrounding moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat and what was left from dir coffee.

Dinner. Meat, potatoes, sometimes vegetables, pickles, bread.
Supper. Bread, butter, tea.

COST OF LIVING,

Rent, \$100 00	Fish, \$10 00	Dry goods,
Fuel, 46 50	Milk, 18 68	Papers,
Groceries, . . 387 42	Boots and shoes, . 29 00	Societies,
Meat, 96 74	Clothing, . . . 58 00	Sundries,

No. 229.

LABORER, IN MILL.

EARNINGS of father,	
son, aged 16,	
son, aged 12,	

CONDITION.—Family numbers 6, parents and 4 children from six to fifteen go to school. Occupy a tenement of 5 rooms, in a poor locality, with unequal surroundings. The house is moderately well furnished, but inconveniently laid. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, gingerbread, coffee.

Dinner. Meat, potatoes, sometimes vegetables, bread, pie.

Supper. Bread, butter, cheese, cake, tea.

COST OF LIVING,

Rent, \$120 00	Fish, \$12 00	Dry good
Fuel, 52 00	Milk, 18 32	Papers,
Groceries, . . 369 96	Boots and shoes, . 31 00	Sundries,
Meat, 68 45	Clothing, . . . 66 00	

No. 230.

LABORER, IN MILL.

EARNINGS of father,	
daughter, aged 16,	

CONDITION.—Family numbers 5, parents and 3 children from seven to 8 two go to school. Occupy a tenement of 5 rooms, well situated in a good house is well furnished and sitting-room carpeted. Family dresses well

FOOD.—*Breakfast.* Bread, butter, meat or eggs, gingerbread and tea.

Dinner. Meat, potatoes, vegetables, pickles, brown bread.

Supper. Bread, butter, cheese, cake, tea.

COST OF LIVING,

Rent, \$100 00	Milk, \$27 60	Societies
Fuel, 49 75	Boots and shoes, . 30 00	Papers,
Groceries, . . 251 20	Clothing, . . . 51 00	Sundries
Meat, 95 40	Dry goods, . . . 20 75	

No. 231.	LABORER, IN MILL.	Fish.
EARNINGS of father,		\$400
daughter, aged 15,		237
		<hr/> \$637

CONDITION.—Family numbers 5, parents and 3 children from seven to fifteen years of age; two go to school. Occupy a tenement of 4 rooms, with good surroundings. House is poorly furnished. Family dresses poorly.

FOOD.—*Breakfast.* Bread, butter, warmed potatoes, coffee.
Dinner. Meat, potatoes, bread.
Supper. Bread, butter, tea.

COST OF LIVING,				\$633 31	
Rent,	\$96 00	Fish,	\$9 00	Dry goods,	\$12 50
Fuel,	37 00	Milk,	13 36	Sundries,	11 28
Groceries,	852 47	Boots and shoes,	14 00		
Meat,	68 70	Clothing,	18 00		

No. 232.	LABORER, IN MILL.	Fish.
EARNINGS of father,		\$304
son, aged 13,		144
		<hr/> \$448

CONDITION.—Family numbers 5, parents and 3 children from six to fifteen years of age; two go to school. Occupy a tenement of 4 rooms, in an unclean locality. The house is poorly furnished, the family dresses poorly and is in debt.

FOOD.—*Breakfast.* Bread, butter and coffee.
Dinner. Meat, potatoes, bread, sometimes pork and cabbage.
Supper. Bread, butter and tea.

COST OF LIVING,				\$570	
Rent,	\$84 00	Fish,	\$7 28	Dry goods,	\$14 00
Fuel,	29 40	Milk,	14 88	Sundries,	11 27
Groceries,	312 87	Boots and shoes,	12 50		
Meat,	66 80	Clothing,	20 00		

No. 233.	LABORER, IN MILL.	Fish.
EARNINGS of father,		\$416
daughter, aged 16,		223
son, aged 13,		112
		<hr/> \$751

CONDITION.—Family numbers 6, parents and 4 children from four to sixteen years of age; one goes to school. Occupy a tenement of 4 rooms, situated in a good neighborhood, with clean surroundings. The house is well furnished, and the family dresses well.

FOOD.—*Breakfast.* Bread, butter, salt pork or fish, and coffee.
Dinner. Meat, potatoes, cabbage and bread.
Supper. Bread, butter and tea.

Cost of Living,				\$730 64	
Rent,	\$120 00	Fish,	\$13 84	Dry goods,	\$19 50
Fuel,	48 00	Milk,	27 30	Sundries,	9 58
Groceries,	387 29	Boots and shoes,	22 80		
Meat,	96 33	Clothing,	46 00		

No. 234.	LABORER, IN MILL.	<i>Irish.</i>
EARNINGS of father,		\$394
daughter, aged 16,		300
daughter, aged 14,		18 ¹ / ₂
		<hr/> \$876

CONDITION.—Family numbers 7, parents and 5 children from three to seventeen years of age; two go to school. Occupy a tenement of 5 rooms, well situated and with good surroundings. The house is moderately well furnished, and the family dresses well, and has money in savings bank.

FOOD.—*Breakfast.* Bread, butter, salt pork, potatoes and coffee.
Dinner. Meat, potatoes, cabbage and bread.
Supper. Bread, butter and tea. Fish for dinner one day, and pork and cabbage one day per week.

COST OF LIVING,				\$852	
Rent,	\$120 00	Fish,	\$14 88	Dry goods,	\$23 00
Fuel,	46 00	Milk,	22 20	Sundries,	18 31
Groceries,	430 00	Boots and shoes,	21 00		
Meat,	96 45	Clothing,	60 00		

No. 235.	LABORER, IN MILL.	<i>Irish.</i>
EARNINGS of father,		\$375
son, aged 18,		137
son, aged 12,		137
		<hr/> \$649

CONDITION.—Family numbers 6, parents and 4 children from eight to thirteen years of age; one goes to school. Occupy a tenement of 5 rooms in a fair locality. House is poorly furnished and kept untidily. Family dresses moderately well, and would rather save money than enjoy the comforts of life.

FOOD.—*Breakfast.* Bread, butter, salt fish, coffee.
Dinner. Meat, potatoes, bread.
Supper. Bread, butter, tea.

COST OF LIVING,				\$626	
Rent,	\$60 00	Fish,	\$13 20	Dry goods,	\$11 50
Fuel,	39 00	Milk,	29 00	Sundries,	26 00
Groceries,	329 90	Boots and shoes,	19 00		
Meat,	61 80	Clothing,	36 00		

No. 236.	LABORER, IN MILL.	<i>Irish.</i>
EARNINGS of father,		\$375
son, aged 13,		160
son, aged 11,		120
		<hr/> \$655

CONDITION.—Family numbers 5, parents and 3 children from five to thirteen years of age; one goes to school. Occupy a tenement of 6 rooms, situated in good neighborhood, with agreeable surroundings. The house is poorly furnished. Family dresses poorly, but saves money.

FOOD.—*Breakfast.* Bread, butter, salt fish and coffee.
Dinner. Meat, potatoes, sometimes cabbage, bread.
Supper. Bread, butter, gingerbread.

COST OF LIVING,				\$555	
Rent,	\$60 00	Fish,	\$24 00	Dry goods,	\$9 00
Fuel,	37 50	Milk,	16 40	Religion,	10 00
Groceries,	219 98	Boots and shoes,	13 60	Sundries,	52 22
Meat,	81 30	Clothing,	31 00		

No. 237.	LABORER, IN MILL.	Irish.
EARNINGS of father,		\$236
daughter, aged 14,		240
		<hr/> \$476

CONDITION.—Family numbers 6, parents and 4 children from two to fourteen years of age; one goes to school. Have a tenement of 6 rooms, with pleasant surroundings. House moderately well furnished. Family dresses well on Sunday, but very carelessly during the week. Cannot save money.

FOOD.—*Breakfast.* Bread, butter, what was left from dinner, and coffee.

Dinner. Meat, potatoes, bread, sometimes pie; have boiled dinner one day per week.

Supper. Bread, butter, sometimes fish, and tea.

COST OF LIVING,				\$428
Rent, \$60 00	Fish, \$14 00	Dry goods,		\$21 75
Fuel, 31 50	Milk, 23 42	Sundries,		40 41
Groceries, . . 259 72	Boots and shoes, . 21 40			
Meat, 93 20	Clothing, 60 00			

No. 238.	LABORER, IN MILL.	Irish.
EARNINGS of father,		\$404
daughter, aged 16,		250
son, aged 13,		170
		<hr/> \$824

CONDITION.—Family numbers 7, parents and 5 children from two to sixteen years of age; two go to school. Occupy a tenement of 6 rooms, well situated, and with good surroundings. The house is moderately well furnished, and the family dresses well and seems rugged and healthy.

FOOD.—*Breakfast.* Bread, butter, meat, gingerbread and coffee.

Dinner. Meat, potatoes, sometimes vegetables, bread, butter, and sometimes pie.

Supper. Bread, butter, fish or cheese, and tea.

COST OF LIVING,				\$779
Rent, \$72 00	Fish, \$8 40	Dry goods,		\$23 90
Fuel, 53 70	Milk, 21 84	Sundries,		30 86
Groceries, . . 342 49	Boots and shoes, . 28 00	Papers,		4 00
Meat, 104 31	Clothing, 90 50			

No. 239.	LABORER, IN MILL.	Irish.
EARNINGS of father,		\$450
son, aged 13,		158
		<hr/> \$608

CONDITION.—Family numbers 6, parents and 4 children from one to thirteen years of age; one goes to school. Occupy a tenement of 5 rooms, in a good locality. House is miserably furnished, but neat. Family dresses poorly, but attends church. Finds it hard to make both ends meet.

FOOD.—*Breakfast.* Salt fish or corned meat, bread, coffee.

Dinner. Meat or fish, potatoes, sometimes cabbage, bread.

Supper. Bread, butter, sometimes potatoes or the remains of dinner, tea.

COST OF LIVING,				\$609
Rent, \$96 00	Fish, \$14 20	Dry goods,		\$18 00
Fuel, 29 50	Milk, 16 30	Sundries,		44 31
Groceries, . . 287 70	Boots and shoes, . 14 60			
Meat, 49 89	Clothing, 37 00			

No. 240.	LABORER, IN MILL.	<i>Irish.</i>
EARNINGS of father,		\$409
son, aged 13,		154
son, aged 11,		150
		<hr/> \$713

CONDITION.—Family numbers 7, parents and 5 children from eight months to thirteen years of age; one goes to school. Occupy a tenement of 5 rooms, in a block of ten tenements, with extremely dirty surroundings. The yard is covered with refuse, and one of the privies with filth from the vault. The house is poorly furnished and dirty. Family dresses poorly. Has money in savings bank.

FOOD.—*Breakfast.* Bread, butter, salt pork, warmed potatoes, and coffee.
Dinner. Meat, potatoes, cabbage and bread.
Supper. Bread, butter, molasses, sometimes gingerbread, and tea. The meat is principally corned meat, and of the cheapest quality that can be bought. Examined it before it was cooked and was told it was a fair sample.

COST OF LIVING,			\$637
Rent, \$90 00	Fish, \$15 26	Dry goods,	\$12 00
Fuel, 31 00	Milk, 17 90	Sundries,	86 09
Groceries, . . . 231 89	Boots and shoes, . . . 16 00		
Meat, 50 76	Clothing, 35 50		

No. 241.	LABORER, IN MILL.	<i>Irish.</i>
EARNINGS of father,		\$375
son, aged 12,		160
son, aged 10,		148
		<hr/> \$683

CONDITION.—Family numbers 7, parents and 5 children from one to twelve years of age; one goes to school. Live in a tenement of 5 rooms, in a poor locality, with filthy surroundings. There is no drain, and the foul water from the sink runs from the sides of the building into the yard and remains there, either to be absorbed by the ground or to evaporate, causing a strong smell throughout the house. The apartments have very little furniture, and of the poorest quality.

FOOD.—*Breakfast.* Bread, salt pork, potatoes, coffee.
Dinner. Bread, meat or fish, potatoes, cabbage.
Supper. Bread, butter, salt fish and tea. Have boiled dinner twice a week, so can use cheap meat.

COST OF LIVING,			\$683
Rent, \$100 00	Fish, \$18 00	Dry goods,	\$15 00
Fuel, 31 50	Milk, 26 09	Sundries,	41 36
Groceries, . . . 329 60	Boots and shoes, . . . 23 75		
Meat, 64 70	Clothing, 32 00		

No. 242.	LABORER, IN MILL.	<i>Irish.</i>
EARNINGS of father,		\$459
son, aged 12,		168
		<hr/> \$627

CONDITION.—Family numbers 7, parents and 5 children from one to twelve years of age. Occupy a tenement of 4 rooms, in a very disagreeable locality. The house is so damp that green mould collects on the building a foot from the ground. The sink-pipes are outside of the building and the water runs all over the yard. Privies exposed to the street, and are out of repair; there is a close, putrid odor all over the house, which is really obnoxious to the tenants. House is also poorly furnished. Family saves money, but dresses miserably.

FOOD.—*Breakfast.* Bread, salt pork or fish, potatoes, coffee.
Dinner. Meat or fish, potatoes, bread.
Supper. Bread and butter, sometimes salt fish, tea. The meat this family uses is the cheapest and the poorest in the market, and is scarcely fit for food.

COST OF LIVING,			\$559
Rent, \$72 00	Fish, \$18 40	Dry goods,	\$12 00
Fuel, 36 75	Milk, 21 85	Sundries,	31 90
Groceries, . . . 269 50	Boots and shoes, . . . 11 60		
Meat, 66 00	Clothing, 29 00		

No. 243.	LABORER, IN MILL.	Fish.
EARNINGS of father,		\$316
son, aged 13,		111
daughter, aged 11,		110
		<u>\$537</u>

CONDITION.—Family numbers 6, parents and 4 children from one to thirteen years of age. Have a tenement of 4 rooms, with poor surroundings, and in a bad locality. House is out of repair and unclean, and is poorly furnished. Family is ill-dressed and in debt.

FOOD.—*Breakfast.* Bread, butter and coffee.
Dinner. Meat or fish, potatoes and bread.
Supper. Bread, butter and tea.

COST OF LIVING,		\$493 24
Rent, \$84 00	Fish, \$11 20	Dry goods, . . . \$10 26
Fuel, 31 50	Milk, 13 00	Sundries, . . . 10 30
Groceries, . . 361 37	Boots and shoes, . 9 00	
Meat, 42 19	Clothing, 20 50	

No. 244.	LABORER, IN MILL.	Fish.
EARNINGS of father,		\$432
son, aged 12,		132
		<u>\$564</u>

CONDITION.—Family numbers 6, parents and 4 children from one to twelve years of age; one goes to school. Occupy a tenement of 4 rooms. The house and surroundings are unclean and unhealthy, the yard small and covered with garbage and drainings from the sink, and the family are poorly dressed.

FOOD.—*Breakfast.* Bread, butter and coffee.
Dinner. Meat or fish, potatoes and bread.
Supper. Bread, butter and tea.

COST OF LIVING,		\$500
Rent, \$78 00	Fish, \$13 00	Dry goods, . . . \$18 00
Fuel, 42 00	Milk, 25 82	Sundries, . . . 20 11
Groceries, . . 231 74	Boots and shoes, . 14 70	
Meat, 68 23	Clothing, 26 80	

No. 245.	LABORER, IN MILL.	Fish.
EARNINGS of father,		\$400
son, aged 14,		192
son, aged 12,		116
		<u>\$708</u>

CONDITION.—Family numbers 6, parents and 4 children from six to fourteen years of age; two go to school. Live in a tenement of 5 rooms, in a poor and dirty locality. The apartments are miserably furnished and kept unclean. Family poorly dressed.

FOOD.—*Breakfast.* Bread, butter, salt pork or fish, coffee.
Dinner. Bread, meat, potatoes. Salt pork and cabbage two days per week.
Supper. Bread, butter and tea.

COST OF LIVING,		\$708
Rent, \$72 00	Fish, \$14 00	Dry goods, . . . \$12 00
Fuel, 49 00	Milk, 27 30	Sundries, . . . 23 24
Groceries, . . 368 09	Boots and shoes, . 18 50	
Meat, 84 27	Clothing, 30 00	

No. 246.	LABORER, IN MILL.	<i>Irish.</i>
EARNINGS of father,		\$340
son, aged 13,		176
		<hr/> \$516

CONDITION.—Family numbers 5, parents and 3 children from one to thirteen years of age; one goes to school. Occupy a tenement of 5 rooms, with good surroundings. House is poorly furnished and kept unclean, so much so that a disagreeable odor penetrates the whole house. Family dresses miserably.

FOOD.—*Breakfast.* Bread, butter, salt pork or fish, coffee.
Dinner. Meat or fish, potatoes, cabbage and salt pork one day per week, bread.
Supper. Bread, butter, tea.

COST OF LIVING,				\$551
Rent, \$48 00	Fish, \$7 00	Dry goods,		\$9 00
Fuel, 37 00	Milk, 12 20	Sundries,		16 00
Groceries, 339 66	Boots and shoes, 11 00			
Meat, 51 14	Clothing, 20 00			

No. 247.	LABORER, IN MILL.	<i>Irish.</i>
EARNINGS of father,		\$352
son, aged 14,		200
		<hr/> \$552

CONDITION.—Family numbers 5, parents and 3 children from four to fourteen years of age; one goes to school. Have a tenement of 4 rooms, with good surroundings. House poorly furnished. Family ill-dressed, but are saving money; have several hundred dollars in the savings bank.

FOOD.—*Breakfast.* Bread, butter, coffee sweetened with molasses.
Dinner. Meat or fish, potatoes and bread,
Supper. Bread, butter and tea. The food of this family is the poorest and cheapest in the market.

COST OF LIVING,				\$512
Rent, \$42 00	Fish, \$9 00	Dry goods,		\$12 00
Fuel, 30 00	Milk, 13 20	Sundries,		33 94
Groceries, 291 49	Boots and shoes, 9 00			
Meat, 48 37	Clothing, 18 00			

No. 248.	LABORER, IN MILL.	<i>Irish.</i>
EARNINGS of father,		\$401 70
daughter, aged 14,		250 00
son, aged 12,		180 00
		<hr/> \$831 70

CONDITION.—Family numbers 6, parents and 4 children from five to fourteen years of age; two go to school. If the father continues in health, he proposes to keep one of his children in school, until he or she is able to do something better than working in a mill for a living. Occupy a tenement of 5 rooms, very disagreeably situated, belonging to the corporation. Very few of the houses belonging to the corporation are kept, either inside or outside, as they should be, being mostly surrounded by the refuse thrown from the houses, left to decay in the streets. This family have made attempts to keep their house clean, but find it very discouraging in such a neighborhood. An apology for a carpet is on one floor, but it only serves to give the other rooms a more bare and cheerless appearance. The parents and children have good clothes for Sundays, but go to their work shabbily dressed.

FOOD.—*Breakfast.* Bread, butter, meat, potatoes, pie and coffee.
Dinner. Meat, potatoes, cabbage, bread, butter and pie.
Supper. Bread, butter, cheese or fish, gingerbread and tea. Have fish for dinner once a week, and have beans occasionally.

COST OF LIVING,				\$764 20
Rent, \$72 00	Fish, \$18 00	Dry goods,		\$19 20
Fuel, 48 75	Milk, 29 60	Sundries,		36 00
Groceries, 306 50	Boots and shoes, 36 25	Religion,		20 00
Meat, 71 90	Clothing, 106 00			

No. 249.	LABORER, IN BLANKET-MILL.	<i>Irish.</i>
EARNINGS of father,		\$360
son, aged 13,		146
		<hr/> \$506

CONDITION.—Family numbers 5, parents and 3 children from one and a half to thirteen years of age; one goes to school. Occupy a tenement of 4 rooms, with unpleasant surroundings. The house is poorly furnished, and has an untidy appearance. Family dresses poorly, and is in debt.

FOOD.—*Breakfast.* Bread, butter, molasses and coffee.
Dinner. Meat or fish, potatoes, sometimes cabbage, bread.
Supper. Bread, butter and tea.

COST OF LIVING,				\$523	
Rent,	\$72 00	Fish,	\$6 50	Dry goods,	\$18 00
Fuel,	26 40	Milk,	23 92	Sundries,	47 43
Groceries,	239 15	Boots and shoes,	12 00		
Meat,	47 60	Clothing,	30 00		

No. 250.	LABORER, IN PAPER-MILLS.	<i>Irish.</i>
EARNINGS of father,		\$361
son, aged 15,		283
son, aged 12,		130
		<hr/> \$779

CONDITION.—Family numbers 7, parents and 5 children from one to fifteen years of age; one goes to school. Occupy a tenement of 5 rooms, in a healthy neighborhood, with good surroundings. House is well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, fish or meat, tea.
Dinner. Meat or fish, potatoes, sometimes vegetables, bread, pie.
Supper. Bread, butter, sometimes cheese, tea.

COST OF LIVING,				\$779	
Rent,	\$96 00	Fish,	\$14 00	Dry goods,	\$30 70
Fuel,	50 00	Milk,	27 80	Sundries,	32 80
Groceries,	341 90	Boots and shoes,	23 00		
Meat,	89 20	Clothing,	84 00		

No. 251.	LABORER, IN PRINT-WORKS.	<i>Irish.</i>
EARNINGS of father,		\$362
son, aged 12,		149
		<hr/> \$511

CONDITION.—Family numbers 6, parents and 4 children from one to twelve years of age; one goes to school. Live in a tenement of 5 rooms, in a miserable locality, with disagreeable surroundings. The apartments are poorly furnished and kept uncleanly. Family ill-dressed. Has money in savings bank, and increases it by savings.

FOOD.—*Breakfast.* Bread, butter, coffee.
Dinner. Bread, meat or fish, potatoes, sometimes cabbage.
Supper. Bread, butter and tea.

COST OF LIVING,				\$476	
Rent,	\$60 00	Meat,	\$48 20	Clothing,	\$26 39
Fuel,	26 30	Fish,	13 00	Dry goods,	10 50
Groceries,	247 80	Boots and shoes,	9 00	Sundries,	34 99

Overseers.	MILL OPERATIVES.	4 Families.
No. 252.	OVERSEER, IN MILL.	American.
EARNINGS of father,		\$1,000
son, aged 19,		520
daughter, aged 16,		300
		<hr/> \$1,820

CONDITION.—Family numbers 9, parents and 6 children from two to nineteen years of age, and servant; three of the children go to school. Occupy a tenement of 7 rooms, with good cellar and wood-shed. The parlor, dining and bedrooms are carpeted, and the kitchen floor is covered with an oil-cloth. Have a piano, sewing and other labor-saving machines. Family dresses well and attends church. Adults usually have a vacation in summer, but are unable to give the expenses, as they generally return visits paid them. Should have to curtail expenses if children did not work, but believe it to be for their future interests to do so.

FOOD.—*Breakfast.* Bread, butter, cold meat or fried ham, potatoes, cake or pie, tea and coffee.

Dinner. Meat, potatoes, vegetables in season, pudding and pie, fish once a week.

Supper. Bread, butter, or toast, with cold meat and potatoes or fish, sometimes sausages, pie and cake, tea or milk. Baked beans two meals per week.

COST OF LIVING,				\$1,544 20	
Rent,	\$168 00	Milk,	\$30 00	Religion,	\$20 00
Fuel,	80 00	Boots and shoes,	85 00	Papers,	9 00
Groceries,	456 80	Clothing,	270 00	Servant,	182 00
Meat,	168 40	Dry goods,	18 00	Sundries,	25 00
Fish,	18 00	Societies,	14 00		

No. 253.	OVERSEER, IN MILL.	American.
EARNINGS of father,		\$940

CONDITION.—Family numbers 4, parents and 2 children of five and eight years of age; both go to school. Occupy a tenement of 6 rooms, in a good locality, with unpleasant surroundings. The house is well furnished, and every room except kitchen is carpeted. Have a sewing-machine and piano. Family dresses well and attends church. Have money saved and hope to increase it every year.

FOOD.—*Breakfast.* Hot biscuits, butter, fresh meat of some kind, cake, pie, tea.

Dinner. Bread and butter, meat, potatoes, vegetables, pickles, pudding or pie, cake, tea.

Supper. Bread, butter, cold meat or fish, sauce, sometimes fruit, cheese, cake. Beans Saturday night and Sunday morning.

COST OF LIVING,				\$833	
Rent,	\$150 00	Milk,	\$27 00	Books and papers,	\$13 00
Fuel,	49 00	Boots and shoes,	23 50	Religion,	20 00
Groceries,	239 80	Clothing,	96 00	Sundries,	60 00
Meat,	99 70	Dry goods,	32 00		
Fish,	15 00	Societies,	8 00		

No. 254.	OVERSEER, IN MILL.	American.
EARNINGS of father,		\$1,000

CONDITION.—Family numbers 4, parents and 2 children of six and ten years of age; both go to school. Occupy a tenement of 7 rooms, very pleasantly situated, with good and healthy surroundings, situated near the mill. House is well furnished and rooms carpeted. Have a sewing-machine and other labor-saving machines. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, fresh meat or eggs, pie, cake, tea, coffee.

Dinner. Bread, butter, meat of some kind, potatoes, vegetables, pickles, fresh or canned fruit, pudding, pie, tea.

Supper. Bread, butter, cold meat, cheese or sauce, cake, pie, tea.

COST OF LIVING,				\$874	
Rent,	\$144 00	Fish,	\$14 00	Dry goods,	\$29 80
Fuel,	36 50	Milk,	31 22	Papers,	12 00
Groceries,	304 80	Boots and shoes,	36 50	Religion,	20 00
Meat,	87 60	Clothing,	100 00	Sundries,	57 58

No. 255.	OVERSEER, IN MILL.		American.
EARNINGS of father,			\$1,000
CONDITION.—Family numbers 4, parents and 2 children of six and twelve years of age; both attend school. Occupy a convenient tenement of 6 rooms, in a brick block; the street and alley-way are clean and the yard-room is good, but a little crowded. The house is well furnished and the rooms carpeted. Have sewing and other labor-saving machines. Family dresses well and attends church. Have money in savings bank.			
FOOD.— <i>Breakfast.</i> Hot biscuit, butter, white and brown bread, steak or eggs, cake, pie, tea and coffee.			
<i>Dinner.</i>	Bread, butter, meat of some kind, potatoes, vegetables, pickles, fruit in season, pie or pudding, tea.		
<i>Supper.</i>	Bread, butter, sauce or cheese, salad in season, occasionally fish or cold meat, tea. Beans on Saturday.		
COST OF LIVING,		\$258 57	
Rent,	\$120 00	Milk,	\$26 80
Fuel,	48 50	Boots and shoes,	42 20
Groceries,	253 75	Clothing,	115 00
Meat,	89 37	Dry goods,	21 00
Fish,	14 25	Societies,	7 00
		Religion,	\$25 00
		Books and papers,	14 00
		Sundries,	82 00

Unskilled. OUT-DOOR EMPLOYMENTS. 108 Families.

No. 256.	FISHERMAN.		American.		
EARNINGS of father,				\$45.	
CONDITION.—Family numbers 5, parents and 3 children from one to nine years of age; two go to school. Have a tenement of 6 rooms, pleasantly situated and with good surroundings. The house is well furnished and two rooms carpeted. Family dresses well and is strong and healthy. The father cannot save money, but can keep the family comfortably so long as as he is able to work. He has a life-insurance.					
FOOD.— <i>Breakfast.</i>	Bread, butter, fish or cold meat, sometimes boiled eggs, cake and coffee.				
<i>Dinner.</i>	Bread, butter, meat or fish, potatoes, vegetables, pickles, pudding and tea.				
<i>Supper.</i>	Bread, butter, cheese or sauce; sometimes fruit, either fresh or canned, tea. Brown bread and beans on Sunday.				
COST OF LIVING,				\$68.	
Rent,	\$115 00	Fish,	\$23 75	Dry goods,	\$25 00
Fuel,	49 25	Milk,	28 40	Societies,	8 00
Groceries,	223 60	Boots and shoes,	37 55	Sundries,	24 45
Meat,	43 00	Clothing,	99 00		

No. 257.		FISHERMAN.		American.	
EARNINGS of father,				\$516	
son, aged 15,				245	
				\$761	

CONDITION.—Family numbers 5, parents and 3 children from three to fifteen years of age; one goes to school all of the time, and the eldest about four months in each year. Own a house (6 rooms), pleasantly situated, with a small garden attached, used principally for flowers. Family dresses well and attends church. The house is well furnished, and is well taken care of, and has an air of comfort and respectability not too common in the homes of working-people.

FOOD.— <i>Breakfast.</i> Bread, butter, what was left from dinner warmed over, pie or cake, sometimes griddle-cakes, and tea.					
<i>Dinner.</i> Bread, butter, meat or fish, potatoes, vegetables, pickles, pie and tea.					
<i>Supper.</i> Bread, butter, fish or cold meat, sauce or cheese, cake and tea. Brown bread and baked beans Saturday nights.					
COST OF LIVING,				\$610 40	
Fuel,	\$56 75	Milk,	\$39 30	Religion,	\$20 00
Groceries,	207 75	Boots and shoes,	43 60	Sundries,	41 00
Meat,	42 25	Clothing,	119 00		
Fish,	19 00	Dry goods,	31 75		

No. 258.

FISHERMAN.

American.

EARNINGS of father, \$693

CONDITION.—Family numbers 4, parents and 2 children of four and eight years of age; one goes to school. Own a house (6 rooms) and garden, free from any incumbrance, situated in a nice neighborhood. The house is well furnished, and the parlor and bedrooms carpeted. Have sewing and wringing machines. It does not cost this family so much to live as some, for the reason that they buy their goods for cash, considering it a saving of 15 per cent. The father has about three months' rest during the year, which time he takes to make his family comfortable. Family dresses well and attends church.

FOOD.—*Breakfast.* Hot biscuit, brown bread, butter, meat or fish, pie, cake and coffee.

Dinner. Bread, butter, meat or fish, potatoes, vegetables, pudding or pie, cheese, tea.

Supper. Bread, butter, sauce, cheese, cake or doughnuts, tea. Baked beans on Sunday.

COST OF LIVING, \$550 45

Fuel, \$53 75	Milk, \$24 60	Religion, \$14 00
Groceries, 189 60	Boots and shoes, 39 00	Societies, 6 00
Meat, 37 00	Clothing, 112 50	Sundries, 32 00
Fish, 20 00	Dry goods, 22 00	

No. 259.

FISHERMAN.

Irish.

EARNINGS of father, \$531
 son, aged 16, 336
 \$867

CONDITION.—Family numbers 6, parents and 4 children from three to sixteen years of age; two go to school. Have a tenement of 6 rooms, well situated in a healthy neighborhood. The rooms are well furnished and clean; the parlor carpeted. Family dresses well and attends church. Has money in the savings bank. The work is hard and dangerous; worked about eight months last year. The children were born in Massachusetts.

FOOD.—*Breakfast.* Bread, butter, eggs or fish, fried potatoes, cake and coffee.

Dinner. Bread, butter, meat, potatoes, vegetables, pie, sometimes soup.

Supper. Bread, butter, cheese or meat, if any left from dinner, cake and tea.

COST OF LIVING, \$770 30

Rent, \$120 00	Fish, \$25 00	Dry goods, \$27 50
Fuel, 54 50	Milk, 29 35	Religion, 24 00
Groceries, 236 75	Boots and shoes, 45 20	Sundries, 42 00
Meat, 56 00	Clothing, 110 00	

No. 260.

LABORER, FOR BUILDERS.

F. Canadian.

EARNINGS of father, \$449
 son, aged 13, 138
 \$587

CONDITION.—Family numbers 5, parents and 3 children from one to thirteen years of age. Have an upper tenement of four rooms in the suburbs, with fair surroundings. House poorly furnished. Family dresses moderately well.

FOOD.—*Breakfast.* Bread, butter, potatoes and coffee.

Dinner. Meat or fish, potatoes, bread.

Supper. Bread, butter, tea.

COST OF LIVING, \$570

Rent, \$120 00	Fish, \$8 90	Dry goods, \$13 00
Fuel, 31 00	Milk, 24 60	Sundries, 13 84
Groceries, 221 76	Boots and shoes, 15 00	
Meat, 83 40	Clothing, 38 50	

No. 261.	LABOREE, FOR BUILDERS.	German.
EARNINGS of father,		\$418
at other work,		135
		<u>\$553</u>

CONDITION.—Family numbers 4, parents and 2 children of three and six years of age; one goes to school. Have a tenement of 3 rooms, in a ten-tenement block, with the surroundings unclean and unhealthy. House poorly furnished. Family dresses moderately well.

FOOD.—*Breakfast.* Bread, butter, and coffee.
Dinner. Meat or fish, potatoes and bread.
Supper. Bread, butter, tea.

COST OF LIVING,			\$533
Rent,	\$96 00	Fish,	\$9 30
Fuel,	36 00	Milk,	10 80
Groceries,	247 93	Boots and shoes,	12 50
Meat,	69 57	Clothing,	33 60
		Dry goods,	\$3 00
		Sundries,	9 30

No. 262.	LABOREE, FOR BUILDERS.	German.
EARNINGS of father,		\$519
son, aged 16,		237
		<u>\$756</u>

CONDITION.—Family numbers 6, parents and 4 children from three to sixteen years of age; one goes to school. Have a tenement of 4 rooms, situated in the suburbs, with fair surroundings. House moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, gingerbread, coffee.
Dinner. Meat, potatoes, sometimes vegetables, bread.
Supper. Bread, butter, sometimes fish, and tea.

COST OF LIVING,			\$746
Rent,	\$132 00	Fish,	\$6 00
Fuel,	41 75	Milk,	26 90
Groceries,	338 66	Boots and shoes,	23 75
Meat,	89 37	Clothing,	56 00
		Dry goods,	\$19 75
		Sundries,	11 33

No. 263.	LABOREE, FOR BUILDERS.	Frick.
EARNINGS of father,		\$480
daughter, aged 16,		219
son, aged 13,		150
		<u>\$849</u>

CONDITION.—Family numbers 6, parents and 4 children from seven to sixteen years of age; two go to school. Have a tenement of 4 rooms, with good surroundings. The rooms are well furnished, and one carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, salt pork, potatoes, coffee.
Dinner. Meat or fish, potatoes, sometimes pie.
Supper. Bread, butter, gingerbread and tea.

COST OF LIVING,			\$884
Rent,	\$168 09	Fish,	\$10 30
Fuel,	44 50	Milk,	30 30
Groceries,	344 29	Boots and shoes,	31 50
Meat,	97 47	Clothing,	60 70
		Dry goods,	\$16 00
		Papers,	6 00
		Sundries,	13 00

No. 264.	LABORER, OUT-DOOR.	English.
EARNINGS of father,		\$400
daughter, aged 15,		196
son, aged 14,		103
		<hr/> \$768

CONDITION.—Family numbers 5, parents and 3 children from eight to fifteen years of age; one goes to school. Occupy a tenement of 4 rooms, in a good locality. The house is well furnished, the parlor carpeted, and the family dresses well.

FOOD.—*Breakfast.* Bread, butter, what was left from dinner, and coffee.

Dinner. Meat, potatoes, bread and pie.

Supper. Bread, butter, gingerbread and tea.

COST OF LIVING,				\$768
Rent, \$132 00	Fish, \$5 24	Dry goods,	\$18 00	
Fuel, 49 00	Milk, 21 30	Papers,	6 00	
Groceries, . . . 349 87	Boots and shoes, . . 15 00	Sundries,	28 19	
Meat, 98 40	Clothing, 45 00			

No. 265.	LABORER, OUT-DOOR.	English.
EARNINGS of father,		\$400
daughter, aged 13,		140
		<hr/> \$600

CONDITION.—Family numbers 5, parents and 3 children from three to thirteen years of age; one goes to school. Occupy a tenement of 4 rooms, in a very poor and disagreeable locality. House poorly furnished, inconvenient and not clean. The family is poorly dressed.

FOOD.—*Breakfast.* Bread, butter and coffee.

Dinner. Meat, potatoes and bread.

Supper. Bread, butter, sometimes fish, and tea.

COST OF LIVING,				\$627
Rent, \$72 00	Fish, \$9 00	Dry goods,	\$14 00	
Fuel, 46 00	Milk, 19 70	Sundries,	31 42	
Groceries, . . . 299 40	Boots and shoes, . . 20 00			
Meat, 85 48	Clothing, 30 00			

No. 266.	LABORER, OUT-DOOR.	English.
EARNINGS of father,		\$400
daughter, aged 16,		239
daughter, aged 13,		186
		<hr/> \$885

CONDITION.—Family numbers 6, parents and 4 children from seven to sixteen years of age; two go to school. Occupy a tenement of 5 rooms, with clean, healthy surroundings. The house is well furnished, the parlor carpeted, and they own a sewing-machine. The family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, what was left from dinner, and coffee.

Dinner. Meat, potatoes, vegetables, bread and pie or pudding.

Supper. Bread, butter, gingerbread and tea.

COST OF LIVING,				\$885
Rent, \$132 00	Fish, \$8 00	Dry goods,	\$29 00	
Fuel, 59 00	Milk, 30 46	Papers,	7 50	
Groceries, . . . 376 94	Boots and shoes, . . 33 80	Religion,	16 00	
Meat, 110 60	Clothing, 64 00	Sundries,	17 70	

No. 267.	LABORER, OUT-DOOR.	English.
EARNINGS of father,		\$417
daughter, aged 16,		300
son, aged 14,		206
		<hr/> \$923

CONDITION.—Family numbers 6, parents and 4 children from four to sixteen years of age; one goes to school. Occupy a tenement of 6 rooms, in a healthy locality, and with pleasant surroundings. The house is well furnished, the parlor is carpeted, and they own a sewing-machine. The family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, doughnuts or cake, and coffee.
Dinner. Meat, potatoes, vegetables, pickles, bread, pie or pudding, and tea.
Supper. Bread, butter, cheese or cold meat, gingerbread and tea. Baked beans
 Saturday nights.

COST OF LIVING,		\$985 28
Rent, \$120 00	Fish, \$14 28	Dry goods, . . . \$31 80
Fuel, 47 50	Milk, 29 10	Sundries, . . . 33 50
Groceries, . . 381 90	Boots and shoes, . 28 00	Papers, . . . 8 00
Meat, 111 60	Clothing, . . . 76 00	Societies, . . . 8 00

No. 268.	LABORER, OUT-DOOR.	English.
EARNINGS of father,		\$443
daughter, aged 16,		368
son, aged 14,		190
		<hr/> \$1,001

CONDITION.—Family numbers 6, parents and 4 children from eight to sixteen years of age; two go to school. Occupy a tenement of 6 rooms, very pleasantly situated in a good neighborhood, with good surroundings. The house is well furnished, the parlor is carpeted, they have a sewing-machine, and the family is well dressed. The father was in debt for several years and has had a hard struggle to support his family; but, with the assistance of his children, can now save some money.

FOOD.—*Breakfast.* Bread, butter, eggs or meat, sometimes warmed potatoes, gingerbread and tea.
Dinner. Meat, potatoes, vegetables, pickles, bread, butter, pie or pudding, and tea. They have soup once a week.
Supper. Bread, butter, sauce, cheese or fish, cake and tea.

COST OF LIVING,		\$946
Rent, \$150 00	Fish, \$8 30	Dry goods, . . . \$22 00
Fuel, 60 50	Milk, 29 76	Sundries, . . . 43 83
Groceries, . . 340 15	Boots and shoes, . 33 50	Books and papers, . 10 00
Meat, 119 86	Clothing, . . . 120 00	Societies, . . . 8 00

No. 269.	LABORER, OUT-DOOR.	English.
EARNINGS of father,		\$400
son, aged 15,		281
daughter, aged 13,		167
		<hr/> \$848

CONDITION.—Family numbers 6, parents and 4 children from seven to fifteen years of age; two go to school. Occupy a tenement of 5 rooms, neighborhood good, and surroundings healthy. The house is well furnished, the parlor carpeted, and the family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat, warmed potatoes and tea.
Dinner. Meat, potatoes, sometimes vegetables, bread and pie.
Supper. Bread, butter, cheese and tea.

COST OF LIVING,		\$848
Rent, \$120 00	Milk, \$27 62	Sundries, . . . \$13 36
Fuel, 51 00	Boots and shoes, . 26 50	Papers, . . . 6 00
Groceries, . . 420 13	Clothing, . . . 57 00	
Meat, 108 39	Dry goods, . . . 18 00	

No. 270.

LABORER, OUT-DOOR.

F. Canadian.

EARNINGS of father,	\$418
son, aged 12,	165
	<hr/> \$583

CONDITION.—Family numbers 5, parents and 3 children from four to twelve years of age; one goes to school. Occupy a tenement of 4 rooms in a very poor locality, where the surroundings are disagreeable and unhealthy. The house is poorly furnished, and the family are meanly dressed.

FOOD. — <i>Breakfast.</i>	Bread, butter, gingerbread and coffee.
<i>Dinner.</i>	Meat, potatoes and bread.
<i>Supper.</i>	Bread, butter, salt fish or corned meat and tea. They have soup one day per week.

COST OF LIVING,				\$583	
Rent,	\$90 00	Fish,	\$12 00	Dry goods,	\$12 00
Fuel,	49 75	Milk,	29 50	Sundries,	36 86
Groceries,	239 29	Boots and shoes,	16 00		
Meat,	71 60	Clothing,	26 00		

No. 271.

LABORER, OUT-DOOR.

F. Canadian.

EARNINGS of father,	\$361
daughter, aged 17,	302
son, aged 15,	220
	<hr/> \$883

CONDITION.—Family numbers 6, parents and 4 children from four to seventeen years of age; one goes to school. Live in a tenement of 5 rooms in a pleasant locality, with good surroundings. The apartments are well furnished and parlor carpeted. Family dresses well and attends church.

FOOD. — <i>Breakfast.</i>	Bread, butter, meat or fish, doughnuts and coffee.
<i>Dinner.</i>	Bread, meat, potatoes, vegetables, pie.
<i>Supper.</i>	Bread, butter, sauce, cake, tea.

COST OF LIVING,				\$883	
Rent,	\$200 00	Fish,	\$9 00	Dry goods,	\$29 00
Fuel,	56 00	Milk,	14 20	Sundries,	29 50
Groceries,	269 21	Boots and shoes, . .	28 60		
Meat,	83 40	Clothing,	65 00		

No. 272.

LABORER, OUT-DOOR.

F. Canadian.

EARNINGS of father,	\$439
son, aged 12,	144
	<hr/> \$583

CONDITION.—Family numbers 4, parents and 2 children of seven and twelve years of age; one goes to school. Live in a tenement of 4 rooms, on third story, with poor and unhealthy surroundings. The apartments are moderately well furnished and kept clean. Family dresses quite fairly.

FOOD. — <i>Breakfast.</i>	Bread, butter, potatoes, coffee.
<i>Dinner.</i>	Bread, meat or fish, potatoes, sometimes pie.
<i>Supper.</i>	Bread, butter, gingerbread and tea.

COST OF LIVING,				\$641 54	
Rent,	\$96 00	Fish,	\$6 39	Dry goods,	\$25 60
Fuel,	38 45	Milk,	12 98	Sundries,	8 74
Groceries,	201 23	Boots and shoes,	19 75		
Meat,	86 40	Clothing,	46 00		

No. 273.	LABORER, OUT-DOOR.	F. Canadian.
EARNINGS of father,		\$300
daughter, aged 16,		247
son, aged 13,		130
		<hr/> \$746

CONDITION.—Family numbers 6, parents and 4 children from six to sixteen years of age; two go to school. Live in a tenement of 4 rooms, with dirty and disagreeable surroundings. The apartments are moderately well furnished, and kept clean. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat or fish, coffee.
Dinner. Bread, meat, potatoes, sometimes vegetables, pla.
Supper. Bread, butter, sometimes cheese, tea.

COST OF LIVING,			\$734 28
Rent, \$120 00	Fish, \$8 00	Dry goods,	\$22 80
Fuel, 49 60	Milk, 13 32	Papers,	4 00
Groceries, . . . 361 42	Boots and shoes, . . 18 00	Sundries,	11 00
Meat, 78 62	Clothing, 47 50		

No. 274.	LABORER, OUT-DOOR.	F. Canadian.
EARNINGS of father,		\$418
son, aged 12,		128
		<hr/> \$546

CONDITION.—Family numbers 6, parents and 4 children from one to twelve years of age; one goes to school. Have a tenement of 3 rooms, in a poor locality. Sanitary arrangements are disgraceful; sink water running in the yard; privies over-running with filth. The house is poorly furnished and dirty; in fact, it is impossible to keep it clean. Family dresses moderately well.

FOOD.—*Breakfast.* Bread, butter, salt fish or fried potatoes, and coffee.
Dinner. Meat or fish, potatoes, bread, and sometimes soup.
Supper. Bread, butter, tea.

COST OF LIVING,			\$546
Rent, \$72 00	Fish, \$11 24	Dry goods,	\$16 50
Fuel, 81 25	Milk, 13 35	Sundries,	39 00
Groceries, . . . 243 96	Boots and shoes, . . 18 50		
Meat, 63 20	Clothing, 35 00		

No. 275.	LABORER, OUT DOOR.	F. Canadian.
EARNINGS of father,		\$438
son, aged 12,		161
		<hr/> \$594

CONDITION.—Family numbers 5, parents and 3 children from one to twelve years of age. Live in a tenement of 4 rooms, in a miserable and dirty locality. The apartments are clean, but poorly furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, what was left from dinner, coffee.
Dinner. Bread, meat or fish, potatoes.
Supper. Bread, butter, sometimes gingerbread, and tea.

COST OF LIVING,			\$594
Rent, \$96 00	Fish, \$6 00	Dry goods,	\$23 50
Fuel, 34 28	Milk, 12 86	Sundries,	15 62
Groceries, . . . 287 60	Boots and shoes, . . 19 25		
Meat, 51 49	Clothing, 48 00		

No. 276.

LABORER, OUT-DOOR.

F. Canadian.

EARNINGS of father,	\$392
daughter, aged 17,	271
son, aged 14,	188
	<hr/> \$851

CONDITION.—Family numbers 5, parents and 3 children from eleven to seventeen years of age; one goes to school. Live in a tenement of 4 rooms, in a good locality, with clean and healthy surroundings. The apartments are tastefully furnished and parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, cold meat, warmed potatoes, gingerbread, coffee.
Dinner. Bread, butter, meat, potatoes, sometimes vegetables, pie.
Supper. Bread, butter, fish or sauce, tea.

COST OF LIVING,				\$582 82
Rent, \$120 00	Fish, \$6 70	Dry goods,	\$26 80	
Fuel, 50 00	Milk, 19 21	Papers,	7 00	
Groceries, . . . 399 39	Boots and shoes, . . 30 00	Religion,	16 00	
Meat, 90 22	Clothing, 63 50	Sundries,	29 50	

No. 277.

LABORER, OUT-DOOR.

F. Canadian.

EARNINGS of father,	\$360
daughter, aged 17,	240
son, aged 14,	172
	<hr/> \$772

CONDITION.—Family numbers 5, parents and 3 children from three to seventeen years of age. Live in a tenement of 5 rooms, well situated, in a pleasant neighborhood, with good surroundings. The apartments are well and tastefully furnished, also have parlor carpeted. Own a piano and a sewing-machine.

FOOD.—*Breakfast.* Bread, butter, cold corned beef or ham, eggs, cake, coffee.
Dinner. Bread, butter, occasionally soup, meat or fish, potatoes, vegetables, pie or pudding.
Supper. Bread, butter, salads, sauce, cake and tea.

COST OF LIVING,				\$752	
Rent,	\$200 00	Fish,	\$12 00	Dry goods,	\$15 00
Fuel,	41 80	Milk,	13 72	Papers,	3 00
Groceries,	231 70	Boots and shoes,	23 60	Sundries,	18 28
Meat,	71 40	Clothing,	72 50		

No. 278.

LABORER, OUT-DOOR.

F. Canadian.

EARNINGS of father,	\$406
daughter, aged 14,	199
son, aged 13,	87
	<hr/> \$692

CONDITION.—Family numbers 5, parents and 3 children from nine to fourteen years of age; one goes to school. Live in a tenement of 4 rooms, about a mile from work, in a good locality, with pleasant surroundings. The apartments are clean and moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, gingerbread, coffee.
Dinner. Bread, meat, potatoes, sometimes pie.
Supper. Bread, butter and tea.

COST OF LIVING,				\$692	
Rent,	\$100 00	Fish,	\$13 29	Dry goods,	\$18 00
Fuel,	37 25	Milk,	28 74	Sundries,	8 64
Groceries,	349 63	Boots and shoes,	23 60		
Meat,	65 55	Clothing,	47 80		

No. 279.	LABORER, OUT-DOOR.	<i>F. Canadian.</i>
EARNINGS of father,		\$300
daughter, aged 17,		310
son, aged 14,		180
		<u>\$590</u>

CONDITION.—Family numbers 7, parents and 5 children from two to seventeen years of age; two go to school. Occupy a tenement of 6 rooms, in a good locality, with pleasant surroundings. The house is well furnished, with one room carpeted. Family dresses well and attends church.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat or fish, cake, pie and coffee.
<i>Dinner.</i>	Meat, potatoes, vegetables, bread, butter, pie and tea.
<i>Supper.</i>	Bread, butter, sauce, sometimes salad, cake and tea.

COST OF LIVING,			\$570
Rent, \$120 00	Fish, \$11 20	Dry goods,	\$41 00
Fuel, 51 00	Milk, 25 40	Papers,	4 00
Groceries, 401 11	Boots and shoes, . . 33 00	Religion,	12 00
Meat, 78 90	Clothing, 79 50	Sundries,	13 80

No. 280.	LABORER, OUT-DOOR.	<i>F. Canadian.</i>
EARNINGS of father,		\$402
daughter, aged 17,		270
		<u>\$672</u>

CONDITION.—Family numbers 4, parents and 2 children from ten to seventeen years of age; one goes to school. Occupy a tenement of 4 rooms, with good surroundings. House furnished moderately well. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat, cake and coffee.
<i>Dinner.</i>	Meat, potatoes, vegetables, bread and pie.
<i>Supper.</i>	Bread, butter, cheese, gingerbread and tea.

COST OF LIVING,			\$683 83
Rent, \$100 00	Fish, \$8 00	Dry goods,	\$14 00
Fuel, 51 00	Milk, 15 00	Papers,	6 00
Groceries, 283 82	Boots and shoes, . . 21 00	Sundries,	21 00
Meat, 80 90	Clothing, 62 50		

No. 281.	LABORER, OUT-DOOR.	<i>F. Canadian.</i>
EARNINGS of father,		\$300
son, aged 11,		180
		<u>\$510</u>

CONDITION.—Family numbers 5, parents and 3 children from one to eleven years of age; one goes to school. Occupy a tenement of 4 rooms, with fair surroundings. House is poorly furnished. Family dresses poorly.

FOOD.— <i>Breakfast.</i>	Bread, butter and coffee.
<i>Dinner.</i>	Meat, potatoes and bread.
<i>Supper.</i>	Bread, butter, sometimes cold meat, tea.

COST OF LIVING,			\$530
Rent, \$43 00	Fish, \$6 00	Dry goods,	\$10 00
Fuel, 30 50	Milk, 21 00	Sundries,	20 00
Groceries, 306 80	Boots and shoes, . . 16 70		
Meat, 60 00	Clothing, 20 00		

No. 282.

LABORER, OUT-DOOR.

German.

EARNINGS of father,										\$395
daughter, aged 16,										300
son, aged 14,										199
										<hr/> \$894

CONDITION.—Family numbers 6, parents and 4 children from eight to sixteen years of age; two go to school. Occupy a tenement of 5 rooms, with good and healthy surroundings, and small garden attached. House is well furnished and parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, gingerbread and coffee.

Dinner. Meat, potatoes, vegetables, bread, pie and tea.

Supper. Bread, butter, cheese or fish, tea.

COST OF LIVING,										\$855 88
Rent,	\$100 00	Fish,	\$8 21	Dry goods,						\$16 50
Fuel,	53 80	Milk,	29 22	Papers,						11 00
Groceries,	387 92	Boots and shoes,	34 20	Societies,						8 00
Meat,	99 03	Clothing,	79 00	Sundries,						29 00

No. 283.

LABORER, OUT-DOOR.

German.

EARNINGS of father,										\$460
son, aged 13,										150
										<hr/> \$610

CONDITION.—Family numbers 5, parents and 3 children from one to thirteen years of age; one goes to school. Occupy a tenement of four rooms, inconvenient and with poor and unpleasant surroundings. The sanitary arrangements are imperfect, as the sink-water runs into the yard and creates quite an offensive odor on warm days. House is furnished moderately well and is quite clean. Family dresses poorly.

FOOD.—*Breakfast.* Bread, butter and coffee.

Dinner. Meat, potatoes, sometimes vegetables, bread.

Supper. Bread, butter, sometimes cheese, gingerbread and tea.

COST OF LIVING,										\$595
Rent,	\$96 00	Fish,	\$8 00	Dry goods,						\$24 00
Fuel,	32 00	Milk,	12 20	Papers,						4 00
Groceries,	248 49	Boots and shoes,	17 30	Sundries,						55 68
Meat,	48 33	Clothing,	49 00							

No. 284.

LABORER, OUT-DOOR.

German.

EARNINGS of father,										\$448
son, aged 13,										180
										<hr/> \$628

CONDITION.—Family numbers 5, parents and 3 children from three to thirteen years of age; one goes to school. Occupy a tenement of 4 rooms, with fair surroundings, which might be improved, with a little expense. House is furnished moderately well. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, remains from dinner, gingerbread and tea.

Dinner. Meat, potatoes, sometimes vegetables, pie and bread.

Supper. Bread, butter, fish or cheese, tea.

COST OF LIVING,										\$613
Rent,	\$60 00	Fish,	\$13 04	Dry goods,						\$40 00
Fuel,	40 00	Milk,	18 27	Papers,						8 00
Groceries,	203 94	Boots and shoes,	23 40	Sundries,						45 00
Meat,	79 60	Clothing,	81 75							

No. 285.	LABORER, OUT-DOOR.	German.
EARNINGS of father,		\$430
daughter, aged 15,		300
son, aged 13,		135
		<hr/> \$865

CONDITION.—Family numbers 5, parents and 3 children from eight to fifteen years of age. Occupy a tenement of 5 rooms, well situated, with pleasant and healthy surroundings. The house is well furnished, the parlor is carpeted, and they have a sewing-machine. The family dresses well and appears comfortable.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat or eggs, cake and tea.
<i>Dinner.</i>	Meat, potatoes, vegetables, bread, butter and pie.
<i>Supper.</i>	Bread, butter, fish or cheese, gingerbread and tea.

COST OF LIVING,				\$225
Rent, \$120 00	Fish, \$14 00	Dry goods,		\$31 50
Fuel, 53 00	Milk, 23 08	Sundries,		43 53
Groceries, . . . 233 18	Boots and shoes, . . 30 80	Books and papers, . .		9 00
Meat, 113 63	Clothing, 93 00	Societies,		6 00

No. 286.	LABORER, OUT-DOOR.	German.
EARNINGS of father,		\$420
son, aged 17,		330
son, aged 14,		198
		<hr/> \$948

CONDITION.—Family numbers 7, parents and 5 children from four to seventeen years of age; two go to school. Occupy a tenement of 5 rooms, situated in a good neighborhood, with pleasant and agreeable surroundings. The house is well furnished and has a small flower-garden attached, which is kept in good order. Have a sewing-machine. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat or gingerbread, coffee.
<i>Dinner.</i>	Meat, potatoes, sometimes vegetables, pickles, bread, pie.
<i>Supper.</i>	Bread, butter, cheese or fruit, cake, tea.

COST OF LIVING,				\$315 31
Rent, \$180 00	Fish, \$6 00	Dry goods,		\$30 00
Fuel, 47 00	Milk, 17 80	Papers,		8 00
Groceries, . . . 418 60	Boots and shoes, . . 30 90	Societies,		6 00
Meat, 106 57	Clothing, 62 60	Sundries,		12 44

No. 287.	LABORER, OUT-DOOR.	German.
EARNINGS of father,		\$419
son, aged 17,		300
son, aged 15,		199
		<hr/> \$918

CONDITION.—Family numbers 7, parents and 5 children from six to seventeen years of age; three go to school. Occupy a tenement of 5 rooms, well situated. The house is well furnished; the parlor is carpeted. They have an organ and a sewing-machine. The family is very intelligent, and dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat and coffee.
<i>Dinner.</i>	Meat, potatoes, pickles, sometimes vegetables, bread, butter and pie.
<i>Supper.</i>	Bread, butter, cheese and tea.

COST OF LIVING,				\$393 05
Rent, \$180 00	Fish, \$7 60	Dry goods,		\$19 50
Fuel, 57 00	Milk, 14 23	Sundries,		14 00
Groceries, . . . 383 21	Boots and shoes, . . 21 70	Papers,		8 00
Meat, 101 83	Clothing, 80 00	Societies,		6 00

No. 288.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$384
son, aged 12,		167
		<hr/> \$551

CONDITION.—Family numbers 5, parents and 3 children from one to twelve years of age; one goes to school. Occupy a tenement of 4 rooms, in a low neighborhood, with very disagreeable surroundings. The house is poorly furnished. Family is ill-dressed.

FOOD.—*Breakfast.* Bread, butter, salt pork or fish, coffee.
Dinner. Meat, potatoes, bread, cabbage and salt pork twice a week.
Supper. Bread, butter, tea.

COST OF LIVING,					\$531 87
Rent,	\$66 00	Fish,	\$10 00	Dry goods,	\$18 00
Fuel,	43 00	Milk,	15 30	Sundries,	13 00
Groceries,	286 97	Boots and shoes,	16 00		
Meat,	41 60	Clothing,	22 00		

No. 289.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$422
daughter, aged 17,		240
		<hr/> \$662

CONDITION.—Family numbers 6, parents and 4 children from two years and a half to seventeen years of age; one goes to school. Occupy a tenement of 4 rooms, with fair surroundings. House is moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold corned meat or fish, coffee.
Dinner. Meat, potatoes, cabbage, bread, pie.
Supper. Bread, butter, gingerbread, tea.

COST OF LIVING,					\$662
Rent,	\$72 00	Fish,	\$6 00	Dry goods,	\$17 50
Fuel,	39 00	Milk,	13 90	Papers,	4 00
Groceries,	336 09	Boots and shoes,	24 00	Sundries,	32 77
Meat,	68 24	Clothing,	43 50		

No. 290.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$440
son, aged 12,		120
		<hr/> \$560

CONDITION.—Family numbers 5, parents and 3 children from three to twelve years of age; one goes to school. Occupy a tenement of 4 rooms, with unpleasant surroundings. The house is poorly furnished, but clean. Family is ill-dressed.

FOOD.—*Breakfast.* Bread, butter, salt pork or fish, coffee.
Dinner. Meat, potatoes, bread.
Supper. Bread, butter, tea. Have cabbage and pork once a week.

COST OF LIVING,					\$560
Rent,	\$72 00	Fish,	\$14 14	Dry goods,	\$24 00
Fuel,	33 26	Milk,	18 60	Sundries,	39 73
Groceries,	261 31	Boots and shoes,	16 00		
Meat,	43 96	Clothing,	37 00		

No. 291.	LABORER, OUT-DOOR.	Irish.
EARNINGS of father,		\$332
son, aged 14,		150
son, aged 11,		96
		<hr/> \$578

CONDITION.—Family numbers 6, parents and 4 children from one to fourteen years of age. Occupy a tenement of 4 rooms, well situated. The house is poorly furnished, and the family is poorly dressed.

FOOD.—*Breakfast.* Bread, butter, potatoes and coffee.
Dinner. Meat, potatoes, sometimes pork and cabbage, and bread.
Supper. Bread, butter and tea.

COST OF LIVING,					\$571 06
Rent,	\$78 00	Fish,	\$12 00	Dry goods,	\$14 00
Fuel,	37 90	Milk,	15 42	Sundries,	16 30
Groceries,	279 76	Boots and shoes,	18 00		
Meat,	68 60	Clothing,	40 00		

No. 292.	LABORER, OUT-DOOR.	Irish.
EARNINGS of father,		\$398
son, aged 15,		220
son, aged 14,		140
		<hr/> \$758

CONDITION.—Family numbers 7, parents and 5 children from six to fifteen years of age; three go to school. Occupy a tenement of 5 rooms, well situated, with agreeable surroundings. The house is well furnished, and the family well dressed.

FOOD.—*Breakfast.* Bread and butter, what was left from dinner, and coffee.
Dinner. Meat or fish, potatoes, sometimes vegetables, and pie.
Supper. Bread, butter and tea.

COST OF LIVING,					\$748
Rent,	\$66 00	Fish,	\$10 80	Dry goods,	\$20 00
Fuel,	50 00	Milk,	14 70	Sundries,	25 90
Groceries,	354 60	Boots and shoes,	26 00	Papers,	6 00
Meat,	97 00	Clothing,	60 00	Religion,	14 00

No. 293.	LABORER, OUT-DOOR.	Irish.
EARNINGS of father,		\$400
daughter, aged 17,		300
son, aged 14,		175
		<hr/> \$875

CONDITION.—Family numbers 7, parents and 5 children from four to seventeen years of age; two go to school. Occupy a tenement of 6 rooms, in a good locality. House is moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat and potatoes, tea.
Dinner. Bread, butter, meat, potatoes, cabbage three times a week, sometimes pie.
Supper. Bread, butter, cold corned meat or fish, tea.

COST OF LIVING,					\$536
Rent,	\$72 00	Fish,	\$9 00	Dry goods,	\$26 00
Fuel,	40 75	Milk,	19 20	Papers,	6 00
Groceries,	416 80	Boots and shoes,	26 00	Sundries,	20 00
Meat,	109 25	Clothing,	73 00		

No. 224.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$414
son, aged 14,		166
son, aged 12,		94
		<hr/> \$674

CONDITION.—Family numbers 6, parents and 4 children from three to fourteen years of age; one goes to school. Live in a tenement of 4 rooms, with good surroundings. The apartments are poorly furnished and dirty. Family dresses poorly.

FOOD.—*Breakfast.* Bread, butter, potatoes, coffee.
Dinner. Bread, meat or fish, potatoes.
Supper. Bread, butter, tea.

COST OF LIVING,			\$674
Rent, . . . \$120 00	Fish, . . . \$12 82	Dry goods, . . .	\$11 60
Fuel, . . . 38 40	Milk, . . . 19 46	Sundries, . . .	23 75
Groceries, . . . 339 19	Boots and shoes, . . . 13 00		
Meat, . . . 71 28	Clothing, . . . 24 50		

No. 225.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$358
daughter, aged 16,		300
son, aged 14,		226
		<hr/> \$884

CONDITION.—Family numbers 7, parents and 5 children from one and one-half to sixteen years of age. Have a tenement of 5 rooms, well situated, with good surroundings; but the yard is partially covered with refuse from the houses. House moderately well furnished, but many necessities wanting. Has money in savings bank.

FOOD.—*Breakfast.* Bread, butter, salt pork, potatoes and coffee.
Dinner. Meat or fish, potatoes, cabbage and bread.
Supper. Bread, butter, salt pork or fish, and gingerbread.

COST OF LIVING,			\$777
Rent, . . . \$100 00	Fish, . . . \$17 20	Dry goods, . . .	\$19 00
Fuel, . . . 42 00	Milk, . . . 18 92	Sundries, . . .	74 83
Groceries, . . . 352 90	Boots and shoes, . . . 26 40		
Meat, . . . 76 00	Clothing, . . . 49 75		

No. 226.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$329
son, aged 14,		192
		<hr/> \$521

CONDITION.—Family numbers 5, parents and 3 children from two to fourteen years of age; one goes to school. Occupy a tenement of 4 rooms, well situated. The house is not well furnished, and is not kept clean. The family is poorly dressed.

FOOD.—*Breakfast.* Bread, butter, salt pork and coffee.
Dinner. Meat, potatoes, cabbage and bread.
Supper. Bread, butter and tea.

COST OF LIVING,			\$555
Rent, . . . \$84 00	Fish, . . . \$9 00	Dry goods, . . .	\$12 00
Fuel, . . . 29 00	Milk, . . . 10 48	Sundries, . . .	10 52
Groceries, . . . 309 68	Boots and shoes, . . . 15 12		
Meat, . . . 47 20	Clothing, . . . 28 00		

No. 297.	LABORER, OUT-DOOR.	Wish.
EARNINGS of father,		\$418
daughter, aged 16,		296
son, aged 14,		183
		<hr/> \$897

CONDITION.—Family numbers 8, parents and 6 children from two to sixteen years of age; two go to school. Occupy a tenement of 4 rooms, situated in a fair locality. House is moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, the remains of dinner, and coffee.
Dinner. Meat or fish, potatoes, cabbage, bread, sometimes pie.
Supper. Bread, butter, sometimes fish, tea.

COST OF LIVING,			\$897
Rent, \$96 00	Fish, \$14 00	Dry goods,	\$32 00
Fuel, 51 60	Milk, 28 48	Papers,	4 00
Groceries, . . . 423 39	Boots and shoes, . . 36 80	Religion,	12 00
Meat, 116 57	Clothing, 59 50	Sundries,	22 66

No. 298.	LABORER, OUT-DOOR.	Wish.
EARNINGS of father,		\$436
son, aged 14,		200
son, aged 18,		170
		<hr/> \$806

CONDITION.—Family numbers 6, parents and 4 children from two years and a half to fourteen years of age; one goes to school. Live in a very inconvenient house of 4 rooms, in poor condition, with fair surroundings. The apartments are moderately well furnished and kept clean. Family dresses well, but plainly.

FOOD.—*Breakfast.* Bread, butter, cold meat or fish, gingerbread, coffee.
Dinner. Bread, meat, fish, potatoes, cabbage.
Supper. Bread, butter, sometimes fish, tea.

COST OF LIVING,			\$775 17
Rent, \$96 00	Fish, \$18 20	Dry goods,	\$25 40
Fuel, 48 50	Milk, 26 50	Sundries,	22 00
Groceries, . . . 372 88	Boots and shoes, . . 18 00		
Meat, 96 00	Clothing, 51 60		

No. 299.	LABORER, OUT-DOOR.	Wish.
EARNINGS of father,		\$421
son, aged 16,		316
son, aged 14,		195
		<hr/> \$932

CONDITION.—Family numbers 8, parents and 6 children from five to sixteen years of age; three go to school. Have a tenement of 6 rooms, well situated, and with good surroundings. House is well furnished, and parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, and what was left from dinner, coffee.
Dinner. Meat, potatoes, cabbage, bread and pie.
Supper. Bread, butter, sometimes fish, and tea.

COST OF LIVING,			\$943
Rent, \$200 00	Fish, \$9 00	Dry goods,	\$21 00
Fuel, 51 75	Milk, 18 23	Papers,	8 00
Groceries, . . . 403 37	Boots and shoes, . . 37 00	Sundries,	16 11
Meat, 101 52	Clothing, 76 00		

No. 300.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$408
son, aged 14,		200
		<hr/> \$608

CONDITION.—Family numbers 4, parents and 2 children, nine and fourteen years of age; one goes to school. Occupy a tenement of 4 rooms, which is well situated. The house is moderately well furnished; the family is decently dressed and attends church.

FOOD.—*Breakfast.* Bread, butter, what was left from dinner, and coffee.
Dinner. Meat or fish, potatoes, sometimes vegetables, and bread.
Supper. Bread, butter, salt fish and tea.

COST OF LIVING,				\$608	
Rent,	\$98 00	Fish,	\$13 80	Dry goods,	\$19 00
Fuel,	48 00	Milk,	14 36	Sundries,	20 80
Groceries,	271 33	Boots and shoes,	29 00	Religion,	10 00
Meat,	54 21	Clothing,	32 00		

No. 301.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$371
son, aged 16,		290
son, aged 14,		180
		<hr/> \$841

CONDITION.—Family numbers 7, parents and 5 children from two to sixteen years of age; two go to school. Occupy a tenement of 6 rooms, well situated, with clean and pleasant surroundings. House is well furnished, and parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat or fish, potatoes, tea.
Dinner. Meat, potatoes, cabbage, bread, pie.
Supper. Bread, butter, sometimes cheese, gingerbread, tea.

COST OF LIVING,				\$327 46	
Rent,	\$132 00	Fish,	\$10 60	Dry goods,	\$23 00
Fuel,	53 00	Milk,	18 30	Papers,	6 00
Groceries,	359 92	Boots and shoes,	36 00	Sundries,	16 50
Meat,	91 14	Clothing,	81 00		

No. 302.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$442

CONDITION.—Family numbers 5, parents and 3 children from one to nine years of age; two go to school. Father never attended school, and thinks his children will have sufficient schooling before they reach their tenth year; thinks no advantage will be gained from longer attendance at school; so children will be put to work as soon as able. Live in a tenement of 4 rooms, in a very poor locality, surrounded by poverty. Father worked ten months of last year at wages ranging from \$1.25 to \$2 per day. Rents a small piece of land and raises potatoes and cabbages; also keeps a pig, and occasionally sells some pork.

FOOD.—*Breakfast.* Bread, butter, salt pork or fish, potatoes, coffee.
Dinner. Bread, fresh meat, ham or fish, potatoes, cabbage, sometimes turnips or other vegetables, and water.
Supper. Bread, butter, sometimes fish or pork, pie or gingerbread. Baked beans, pork and cabbage, each once a week.

COST OF LIVING,				\$432	
Rent,	\$100 00	Meat,	\$36 00	Clothing, boots and shoes,	\$35 00
Fuel,	30 50	Fish,	16 00	Sundries,	9 75
Groceries,	180 75	Milk,	24 00		

No. 303.	LABORER, OUT-DOOR.	Irish.
EARNINGS of father,		\$515
son, aged 18,		416
daughter, aged 17,		330
son, aged 14,		296
		<hr/> \$1,437

CONDITION.—Family numbers 8, parents and 6 children from eight to eighteen years of age; three go to school. Have a good tenement of 6 rooms in a pleasant and healthy locality, with good yard and small flower garden. The house is well furnished, and every room but the kitchen carpeted. Have a sewing-machine. This family is respectable and intelligent; has a pleasant home, and dresses well. Attends church regularly. Has had no sickness for five years, and never had much. The children were all born in Massachusetts. The father worked eleven months for wages from \$1.25 to \$2 per day. The three elder children worked a little over eight months. This family has never done so well as this last year, although trade was dull in the shops. Saved over \$200. Has money in savings bank.

FOOD.—*Breakfast.* Bread, butter, eggs or meat, sometimes toast and sausage, cake or pie, and tea.
Dinner. Bread, butter, fresh meat or fish, potatoes, vegetables, pickles, pudding, pie and tea.
Supper. Bread, butter, cheese, cold meat from dinner, cake, pie and tea.

COST OF LIVING,			\$1,306 25
Rent, \$226 00	Milk, \$29 60	Books and papers, . .	\$12 00
Fuel, 68 00	Boots and shoes, . .	Furniture, carpets, .	120 00
Groceries, . . . 476 90	Clothing, 145 00	Sundries,	18 00
Meat, 84 00	Dry goods, 36 75		
Fish, 21 00	Religion, 30 00		

No. 304.	LABORER, OUT-DOOR.	Irish.
EARNINGS of father,		\$551 84

CONDITION.—Family numbers 6, parents and 4 children under ten years of age; two go to school. Occupy a tenement of 4 rooms, which are kept neat and clean, but only one is carpeted. Family dresses well and comfortably, and attends church regularly. The mother owns a sewing-machine, bought before they had such a large family, with which she makes all her own and children's clothes, besides doing work enough for other people to buy material for her family's garments; but with all her work, they find it difficult to pay the bills. The father lost a little over a week through sickness, last year; has a little money in savings bank, but has not increased it any for five years; believes in keeping family well, as good food and clothing are cheaper than medicine.

FOOD.—*Breakfast.* Bread, butter, cold meat, eggs or ham, potatoes, coffee.
Dinner. Meat, potatoes, and other vegetables, sometimes fish, sometimes beef or mutton soup, but only one kind of meat at a time, pudding or pie.
Supper. Bread, butter, cake or gingerbread, sometimes cheese instead of butter. Have baked beans and brown bread once a week.

COST OF LIVING,			\$547 03
Rent, \$96 00	Meat and fish, . . \$60 48	Clothing,	\$30 00
Fuel, 48 00	Milk, 27 20	Dry goods,	9 00
Groceries, . . . 256 45	Boots and shoes, . . 19 90	Sundries,	10 00

No. 306.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$408
daughter, aged 13,	183
son, aged 12,	150
son, aged 10,	150
	<hr/> \$891

CONDITION.—Family numbers 8, parents and 6 children from two to thirteen years of age; two go to school. Live in a tenement of 5 rooms, in a large block; the block is situated in a back-alley, and a very disagreeable odor pervades the whole locality. Family dresses poorly, but warmly, and attends church. The father, by paying in instalments, has become owner of two house-lots, upon which he raises potatoes and cabbages; also keeps a pig.

FOOD. — <i>Breakfast.</i>	Bread, butter, salt pork or fish, potatoes and tea.
<i>Dinner.</i>	Bread, meat, fish three days per week, and pork or ham the rest, potatoes, cabbage once or twice a week.
<i>Supper.</i>	Bread, butter, sometimes cheese, tea.

COST OF LIVING,				\$727 70	
Rent,	\$108 00	Fish,	\$24 00	Dry goods,	\$6 00
Fuel,	50 50	Milk,	27 20	Papers,	2 00
Groceries, . . .	380 00	Boots and shoes, . .	26 60	Sundries,	11 80
Meat,	49 60	Clothing,	62 00		

No. 306.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$351
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CONDITION.—Family numbers 5, parents and 3 children from two to seven years of age. Have a tenement of 3 rooms in a large tenement block, in which is an average of two and a half persons to each room; it is situated in a very unhealthy neighborhood. The father works only about nine months in the year, and the mother goes out washing. A part of the fuel is picked from the streets by the children, who do not attend school. This family is a little over \$50 in debt. It took more than the mother could earn to buy the clothes, and as there was some sickness, it ran them in debt a little for physician and medicine. Family dresses poorly.

FOOD.—As to how they live, they could not tell, as it varied according to their means. They have meat only two days per week.

COST OF LIVING,	\$363 90
Rent, \$66 00	Milk, \$13 60
Fuel, 23 00	Fish, 18 00
Groceries, 201 80	Boots and shoes, 14 25
Meat, 24 25	Poll tax, 2 00

No. 307.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$418
son, aged 12,	148
son, aged 11,	119
	<hr/> \$685

CONDITION.—Family numbers 6, parents and 4 children from one to twelve years of age; one goes to school. Live in a tenement of 4 rooms in a poor locality, with unclean and unhealthy surroundings. The apartments are scantily furnished and dirty. Family dresses poorly. Has money in savings bank.

FOOD. — <i>Breakfast.</i>	Bread, butter, salt pork or fish, coffee.
<i>Dinner.</i>	Bread, meat, potatoes, sometimes cabbage.
<i>Supper.</i>	Bread, butter, tea.

COST OF LIVING,				\$654	
Rent,	\$84 00	Fish,	\$13 90	Dry goods,	\$13 25
Fuel,	28 00	Milk,	27 42	Sundries,	13 38
Groceries,	354 29	Boots and shoes,	20 00		
Meat,	67 26	Clothing,	22 60		

No. 308.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$400
son, aged 14,		237
		<hr/> \$637

CONDITION.—Family numbers 5, parents and 3 children from nine months to fourteen years of age; one goes to school. They live in a bad locality and unhealthy neighborhood. It is no matter for surprise that the expenses for doctor and medicine last year equalled the extra money they would have had to pay for rent in a better neighborhood. The house is very scantily furnished (5 rooms), the family dresses poorly, and is often ill.

FOOD.—*Breakfast.* Bread, butter, potatoes and coffee.
Dinner. Meat or fish, potatoes and bread.
Supper. Bread, butter and tea.

COST OF LIVING,				\$507 57
Rent, \$120 00	Fish,	\$6 00	Dry goods,	\$14 75
Fuel, 49 00	Milk,	22 20	Sundries, including	
Groceries, . . . 347 87	Boots and shoes, . .	21 00	doctor's bill, . . .	65 00
Meat, 40 25	Clothing,	28 50		

No. 309.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$383
Other work,		112
		<hr/> \$495

CONDITION.—Family numbers 5, parents and 3 children from one to eight years of age; one goes to school. Occupy a tenement of 3 rooms, with very disagreeable surroundings. The drainings from the sink remain in the yard and create a putrid odor, impregnating the house and rendering the air the family breathes quite sickening. The house is very poorly furnished, and the family do not dress well. Much of the fuel used is gathered from the streets by the children. The father has earned \$112 by doing work for others after his day's work was done.

FOOD.—*Breakfast.* Bread, butter, warmed potatoes and coffee.
Dinner. Meat, potatoes and bread.
Supper. Bread, butter and tea.

COST OF LIVING,				\$514
Rent, \$72 00	Fish,	\$6 00	Dry goods,	\$9 00
Fuel, 16 00	Milk,	14 28	Sundries,	11 86
Groceries, . . . 301 76	Boots and shoes, . .	12 00		
Meat, 48 50	Clothing,	23 00		

No. 310.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$361
son, aged 15,		200
		<hr/> \$561

CONDITION.—Family numbers 5, parents and 3 children from eight to fifteen years of age; two go to school. Have a tenement of 4 rooms, situated in a poor neighborhood, with unpleasant surroundings. House poorly furnished and family ill-dressed. Has money in savings bank.

FOOD.—*Breakfast.* Bread, butter, potatoes and coffee.
Dinner. Meat or fish, potatoes and bread.
Supper. Bread, butter and tea.

COST OF LIVING,				\$532 23
Rent, \$120 00	Fish,	\$9 00	Dry goods,	\$12 00
Fuel, 32 00	Milk,	15 82	Sundries,	13 00
Groceries, . . . 244 30	Boots and shoes, . .	18 00		
Meat, 41 60	Clothing,	27 00		

No. 311.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$380	
son, aged 13,	160	
		\$540

CONDITION.—Family numbers 6, parents and 4 children from nine months to thirteen years of age; one goes to school. Occupy a tenement of 5 rooms, poorly situated, with dirty yard and in a dirty street. The water-closet and sink-pipes are out of order and running over, the house needs shingles and clapboards, the window-glass is broken and replaced by old rags; the rooms are poorly furnished, and it is impossible to keep them clean in their present condition. The family is meanly dressed, but save money. The father raises his potatoes, cabbages and pork, and has some to sell, the proceeds of which he puts into the bank. Most of the fuel used in the family is picked up in the streets by the children.

FOOD.—*Breakfast.* Bread, butter, salt pork, potatoes and coffee.

Dinner. Meat, potatoes, cabbage, bread and sometimes pie.

Supper. Bread, butter, what is left from dinner, and tea. The meat they eat is from the cheapest places, and used mostly for boiling with cabbage. They have fish for dinner one day per week.

COST OF LIVING,				\$515	
Rent,	\$120 00	Meat,	\$44 00	Clothing,	\$35 00
Fuel,	18 00	Fish,	9 00	Dry goods,	17 00
Groceries,	223 60	Boots and shoes,	13 00	Sundries,	30 40

No. 312.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$480	
son, aged 14,	210	
		\$670

CONDITION.—Family numbers 5, parents and 3 children from three to fourteen years of age; one goes to school. Occupy a tenement of 5 rooms, near the water, in a narrow street, with unclean and disagreeable surroundings and little yard-room. The house is old and somewhat dilapidated, but clean inside and moderately well furnished. Family dresses comfortably, and seems very happy for people in their circumstances. They have a garden and raise all the vegetables they use, which saves considerable in the course of the year.

FOOD. *Breakfast.* Bread, butter, cold meat or fish, potatoes, coffee.

Dinner. Meat, potatoes, cabbage, pie.

Supper. Bread, butter, the remains of dinner, and tea.

Cost of Living,				\$648	
Rent,	\$84 00	Fish,	\$13 20	Dry goods,	\$17 00
Fuel,	38 00	Milk,	27 40	Sundries,	23 75
Groceries,	296 75	Boots and shoes,	29 75		
Meat,	69 90	Clothing,	48 25		

No. 313.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$424	
son, aged 15,	200	
son, aged 14,	140	
		\$764

CONDITION.—Family numbers 7, parents and 5 children from two to seventeen years of age; two go to school. Live in a tenement of 5 rooms, in a good locality, with fair surroundings. The apartments are well furnished and parlor carpeted. Family dresses well, and has money in savings bank.

FOOD.—*Breakfast.* Bread, butter, cold meat, tea.

Dinner. Bread, meat, potatoes, vegetables.

Supper. Bread, butter, sometimes fish, gingerbread, tea.

COST OF LIVING,				\$738	
Rent,	\$100 00	Fish,	\$9 00	Dry goods,	\$19 30
Fuel,	50 50	Milk,	15 30	Papers,	6 00
Groceries,	329 19	Boots and shoes,	30 00	Religion,	12 00
Meat,	92 24	Clothing,	54 25	Sundries,	20 22

No. 314.	LABORER, OUT-DOOR.	Wish.
EARNINGS of father,		\$416
daughter, aged 16,		223
		<hr/> \$639

CONDITION.—Family numbers 6, parents and 4 children from three to sixteen years of age; two go to school. Have a tenement of 4 rooms, well situated in a good neighborhood, and with good surroundings. House moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, salt pork, potatoes and coffee.

Dinner. Meat, potatoes, cabbage and bread.

Supper. Bread, butter and tea.

COST OF LIVING,				\$639
Rent, \$84 00	Fish, \$7 75	Dry goods,	\$14 00	
Fuel, 41 00	Milk, 29 62	Sundries,	27 10	
Groceries, . . 313 94	Boots and shoes, . 23 50			
Meat, 57 09	Clothing, 41 00			

No. 315.	LABORER, OUT-DOOR.	Wish.
EARNINGS of father,		\$306
son, aged 14,		160
		<hr/> \$466

CONDITION.—Family numbers 6, parents and 4 children from two to fourteen years of age; one goes to school. Occupy a tenement of 4 rooms; the locality and surroundings are very good, but the house is unclean and poorly furnished. The family dresses poorly.

FOOD.—*Breakfast.* Bread, butter, salt pork and coffee.

Dinner. Meat or fish, potatoes and bread. Cabbage and salt pork for dinner two days per week.

Supper. Bread, butter and tea.

COST OF LIVING,				\$556
Rent, \$60 00	Fish, \$11 20	Dry goods,	\$12 00	
Fuel, 35 00	Milk, 17 80	Sundries,	21 72	
Groceries, . . 289 41	Boots and shoes, . 17 50			
Meat, 60 37	Clothing, 31 00			

No. 316.	LABORER, OUT-DOOR.	Wish.
EARNINGS of father,		\$420
other work,		80
		<hr/> \$500

CONDITION.—Family numbers 5, parents and 3 children from three to ten years of age; one goes to school. Occupy a tenement of 4 rooms, with good surroundings. House is poorly furnished. Family dresses coarsely, but comfortably. The father earned \$20 more than his regular wages by sawing wood and doing other extra work.

FOOD.—*Breakfast.* Bread, butter, salt fish, coffee.

Dinner. Meat, potatoes, sometimes cabbage, bread.

Supper. Bread, butter, tea.

COST OF LIVING,				\$500
Rent, \$66 00	Fish, \$14 00	Dry goods,	\$3 00	
Fuel, 27 50	Milk, 12 60	Sundries,	24 34	
Groceries, . . 264 89	Boots and shoes, . 14 00			
Meat, 47 92	Clothing, 20 75			

EARNINGS of father,	\$448	
son, aged 13,	174	
		\$622

CONDITION.—Family numbers 6, parents and 4 children from two to thirteen years of age; one goes to school. Live in a tenement of 4 rooms, in a poor neighborhood, with unpleasant surroundings. The apartments are poorly furnished. Family dresses miserably.

FOOD.—*Breakfast.* Bread, butter, potatoes, coffee.

Dinner. Bread, meat or fish, potatoes.

Supper. Bread, butter, tea.

COST OF LIVING, \$622

Rent, \$84 00	Fish, \$6 40	Dry goods, . . . \$15 00
Fuel, 83 60	Milk, 16 82	Sundries, . . . 17 06
Groceries, . . 849 36	Boots and shoes, . 14 00	
Meat, 62 76	Clothing, 23 00	

No. 318.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$392	
son, aged 15,	190	
son, aged 13,	142	
		\$724

CONDITION.—Family numbers 7, parents and 5 children from five to fifteen years of age; three go to school. Have a tenement of 5 rooms; the locality and its surroundings are fair. House moderately well furnished. Family dresses plainly.

FOOD.—*Breakfast.* Bread, butter, what was left from dinner, and coffee.

Dinner. Meat or fish, potatoes, sometimes cabbage, and bread.

Supper. Bread, butter, salt pork or fish, and tea.

COST OF LIVING, \$724

Rent, \$100 00	Fish, \$9 00	Dry goods, . . . \$21 00
Fuel, 37 00	Milk, 15 22	Papers, 5 00
Groceries, . . 379 19	Boots and shoes, . 17 00	Sundries, . . . 20 17
Meat, 78 42	Clothing, 42 00	

No. 319.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$420	
son, aged 14,	123	
		\$552

CONDITION.—Family numbers 5, parents and 3 children from one to fourteen years of age. Occupy a tenement of 4 rooms, with good surroundings. The house is poorly furnished, and the family meanly dressed, but they have money in savings bank.

FOOD.—*Breakfast.* Bread, butter, potatoes and coffee.

Dinner. Meat, potatoes and bread.

Supper. Bread, butter and tea.

COST OF LIVING, \$536

Rent, \$84 00	Fish, \$7 00	Dry goods, . . . \$12 00
Fuel, 30 00	Milk, 19 60	Sundries, . . . 36 71
Groceries, . . 273 49	Boots and shoes, . 13 00	
Meat, 41 20	Clothing, 19 00	

No. 820.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$468
son, aged 18,		160
son, aged 12,		160
		<hr/> \$728

CONDITION.—Family numbers 6, parents and 4 children from one to thirteen years of age; one goes to school. Occupy a tenement of 4 rooms, in a poor locality. House is unclean and miserably furnished. Family is ill-dressed.

FOOD.—*Breakfast.* Bread butter, the remains of dinner, and coffee.
Dinner. Meat, potatoes, cabbage, bread.
Supper. Bread, butter, gingerbread, tea.

COST OF LIVING,				\$728
Rent, \$96 00	Fish, \$12 80	Dry goods,	\$30 00	
Fuel, 46 00	Milk, 21 40	Sundries,	20 06	
Groceries, 386 90	Boots and shoes, 23 30			
Meat, 66 54	Clothing, 81 00			

No. 821.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$426
son, aged 14,		210
		<hr/> \$636

CONDITION.—Family numbers 6, parents and 4 children from two to fourteen years of age; two go to school. Live in a tenement of 4 rooms, situated in a good neighborhood, with clean and healthy surroundings. The apartments are moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, potatoes, coffee.
Dinner. Bread, meat or fish, potatoes.
Supper. Bread, butter and tea.

COST OF LIVING,				\$636
Rent, \$96 00	Fish, \$8 60	Dry goods,	\$17 00	
Fuel, 40 75	Milk, 13 21	Sundries,	22 32	
Groceries, 329 43	Boots and shoes, 18 40			
Meat, 47 29	Clothing, 43 00			

No. 822.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$369
son, aged 16,		244
son, aged 13,		181
		<hr/> \$794

CONDITION.—Family numbers 7, parents and 5 children from four to sixteen years of age; two go to school. Have a tenement of 4 rooms, in a poor neighborhood, with the surroundings unpleasant; the yard is filthy with sink-water and refuse. The house is poorly furnished and dirty. Family dresses shabbily. Has money in savings bank, and adds to it every year.

FOOD.—*Breakfast.* Bread, butter, salt pork or fish, and coffee.
Dinner. Meat, potatoes, cabbage, bread.
Supper. Bread, butter, gingerbread and tea.

COST OF LIVING,				\$794
Rent, \$72 00	Fish, \$12 00	Dry goods,	\$15 00	
Fuel, 44 50	Milk, 26 40	Sundries,	23 06	
Groceries, 374 20	Boots and shoes, 24 00			
Meat, 97 04	Clothing, 43 00			

No. 323.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$424	
son, aged 12,	150	
		\$574

CONDITION.—Family numbers 5, parents and 3 children from two to twelve years of age; one goes to school. Occupy a tenement of 3 rooms, in an undesirable neighborhood. The house is poorly furnished, but is kept as neatly as possible in such surroundings. The family is in very poor circumstances, and dresses meanly.

FOOD. — <i>Breakfast.</i>	Bread, butter, and coffee.
<i>Dinner.</i>	Meat, potatoes, sometimes cabbage, and bread.
<i>Supper.</i>	Bread, butter and tea.

COST OF LIVING,				\$601 95	
Rent,	\$50 00	Fish,	\$7 42	Dry goods,	\$13 70
Fuel,	49 00	Milk,	10 26	Sundries,	23 00
Groceries,	329 80	Boots and shoes,	17 00		
Meat,	63 27	Clothing,	23 50		

No. 324.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$400	
son, aged 14,	210	
		\$670

CONDITION.—Family numbers 6, parents and 4 children from three to fourteen years of age; one goes to school. Occupy a tenement of 5 rooms, with clean and pleasant surroundings. House is moderately well furnished. Family dresses poorly.

FOOD. — <i>Breakfast.</i>	Bread, butter, potatoes, coffee.
<i>Dinner.</i>	Meat or fish, potatoes, cabbage, bread.
<i>Supper.</i>	Bread, butter, tea.

COST OF LIVING,				\$704	
Rent,	\$100 00	Fish,	\$6 36	Dry goods,	\$12 00
Fuel,	44 00	Milk,	13 49	Sundries,	18 19
Groceries,	331 60	Boots and shoes,	19 25		
Meat,	86 20	Clothing,	23 00		

No. 325.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$463	
son, aged 15,	186	
		\$649

CONDITION.—Family numbers 5, parents and 3 children, from four to sixteen years of age; one goes to school. Live in a tenement of 4 rooms, with good surroundings. The apartments are moderately well furnished. Family dresses quite well.

FOOD. — <i>Breakfast.</i>	Bread, butter, coffee.
<i>Dinner.</i>	Bread, meat or fish, potatoes.
<i>Supper.</i>	Bread, butter, tea. Pork and cabbage one day per week.

COST OF LIVING,				\$649	
Rent,	\$96 00	Fish,	\$8 61	Dry goods, . . .	\$12 00
Fuel,	46 00	Milk,	15 80	Sundries, . . .	27 35
Groceries, . .	312 19	Boots and shoes,	16 50		
Meat,	73 30	Clothing, . . .	41 25		

No. 326.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$286
son, aged 13,		144
		<hr/> \$530

CONDITION.—Family numbers 5, parents and 3 children from four to thirteen years of age; one goes to school. Have a tenement of 4 rooms, poorly situated; the neighborhood and surroundings are disagreeable and dirty. House out of repair and badly furnished. Family dresses poorly and cannot pay the bills.

FOOD.—*Breakfast.* Bread, butter, potatoes and coffee.
Dinner. Meat, potatoes and bread.
Supper. Bread, butter and tea.

COST OF LIVING,						\$543 00
Rent, \$96 00	Fish,	\$10 00	Dry goods,			\$12 00
Fuel, 42 00	Milk,	12 40	Sundries,			13 00
Groceries, . . . 277 21	Boots and shoes, . .	16 75				
Meat, 42 83	Clothing,	26 50				

No. 327.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$450
son, aged 14,		280
		<hr/> \$730

CONDITION.—Family numbers 6, parents and 4 children from three to fourteen years of age; two go to school. Occupy a tenement of 5 rooms, well situated. The house is fairly furnished and the family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat, gingerbread and coffee.
Dinner. Meat, potatoes, sometimes vegetables, bread and butter.
Supper. Bread, butter, cheese or fish, and tea.

COST OF LIVING,						\$730
Rent, \$72 00	Fish,	\$14 50	Dry goods,			\$21 00
Fuel, 45 00	Milk,	31 07	Sundries,			37 00
Groceries, . . . 284 63	Boots and shoes, . .	30 00	Papers,			5 00
Meat, 104 30	Clothing,	65 50				

No. 328.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$243
daughter, aged 17,		200
son, aged 14,		150
		<hr/> \$753

CONDITION.—Family numbers 6, parents and 4 children from one to seventeen years of age; one only goes to school. Occupy a tenement of 4 rooms, in a pleasant locality, with good surroundings. House is fairly furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, salt pork, potatoes, coffee.
Dinner. Meat, potatoes, cabbage, bread.
Supper. Bread, butter, gingerbread, tea.

COST OF LIVING,						\$753
Rent, \$66 00	Fish,	\$6 80	Dry goods,			\$30 00
Fuel, 49 00	Milk,	23 42	Papers,			4 00
Groceries, . . . 363 19	Boots and shoes, . .	26 00	Religion,			10 00
Meat, 101 74	Clothing,	48 00	Sundries,			19 35

No. 329.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$490
son, aged 15,	300
	<hr/> \$790

CONDITION.—Family numbers 6, parents and 4 children from one to fifteen years of age; one goes to school. Live in a tenement of 5 rooms, situated in a miserable neighborhood, where the sink-water and other refuse cover a large portion of the yard; at the time when visited, this water was over three inches deep and covered with green slime, causing a very disagreeable odor through every room in the house. Family dresses poorly, but saves money, and has several hundred dollars in savings bank.

FOOD.—*Breakfast.* Bread, butter, corned meat or fish, coffee.
Dinner. Bread, meat or fish, potatoes, cabbage.
Supper. Bread, butter, salt pork or fish, tea. Have boiled pork and cabbage for dinner two days per week.

COST OF LIVING,				\$739	
Rent,	\$144 00	Fish,	\$17 41	Dry goods,	\$15 00
Fuel,	23 75	Milk,	26 00	Sundries,	56 57
Groceries,	316 89	Boots and shoes, . .	31 00		
Meat,	74 38	Clothing,	29 00		

No. 330.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$400
son, aged 14,	220
	<hr/> \$620

CONDITION.—Family numbers 6, parents and 4 children from three to fourteen years of age; two go to school. Have a tenement of 4 rooms in a poor neighborhood, and the surroundings disagreeable. House poorly furnished and dirty. Family ill-dressed.

FOOD.—*Breakfast.* Bread, butter, potatoes and coffee.
Dinner. Meat, potatoes, sometimes cabbage, bread.
Supper. Bread, butter and tea.

COST OF LIVING,				\$701	
Rent,	\$120 00	Fish,	\$11 40	Dry goods,	\$10 00
Fuel,	49 75	Milk,	23 62	Sundries,	15 19
Groceries,	358 50	Boots and shoes,	14 65		
Meat,	67 89	Clothing,	30 00		

No. 331.

LABORER, OUT-DOOR.

Irish.

EARNINGS of father,	\$396
son, aged 15,	209
	<hr/> \$605

CONDITION.—Family numbers 6, parents and 4 children from one to fifteen years of age; one goes to school. Occupy a tenement of 4 rooms, situated in a disagreeable and untidy neighborhood. The house is meanly furnished, and the family poorly dressed.

FOOD.—*Breakfast.* Bread, butter and coffee.
Dinner. Meat or fish, potatoes and bread.
Supper. Bread, butter and tea.

COST OF LIVING,				\$665	
Rent,	\$120 00	Fish,	\$12 66	Dry goods,	\$15 00
Fuel,	37 75	Milk,	11 28	Sundries,	20 10
Groceries, . .	364 29	Boots and shoes, .	16 00		
Meat,	43 32	Clothing,	24 60		

No. 297.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$418
daughter, aged 16,		296
son, aged 14,		183
		<hr/> \$897

CONDITION.—Family numbers 8, parents and 6 children from two to sixteen years of age; two go to school. Occupy a tenement of 4 rooms, situated in a fair locality. House is moderately well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, the remains of dinner, and coffee.
Dinner. Meat or fish, potatoes, cabbage, bread, sometimes pie.
Supper. Bread, butter, sometimes fish, tea.

COST OF LIVING,				\$397
Rent, \$96 00	Fish, \$14 00	Dry goods,		\$32 00
Fuel, 51 60	Milk, 23 48	Papers,		4 00
Groceries, . . . 423 39	Boots and shoes, . 36 30	Religion,		12 00
Meat, 116 57	Clothing, 69 50	Sundries,		22 66

No. 298.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$436
son, aged 14,		200
son, aged 13,		170
		<hr/> \$806

CONDITION.—Family numbers 6, parents and 4 children from two years and a half to fourteen years of age; one goes to school. Live in a very inconvenient house of 4 rooms, in poor condition, with fair surroundings. The apartments are moderately well furnished and kept clean. Family dresses well, but plainly.

FOOD.—*Breakfast.* Bread, butter, cold meat or fish, gingerbread, coffee.
Dinner. Bread, meat, fish, potatoes, cabbage.
Supper. Bread, butter, sometimes fish, tea.

COST OF LIVING,				\$775 17
Rent, \$96 00	Fish, \$18 20	Dry goods,		\$25 40
Fuel, 48 50	Milk, 26 50	Sundries,		22 09
Groceries, . . . 872 88	Boots and shoes, . 18 00			
Meat, 96 09	Clothing, 51 60			

No. 299.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$421
son, aged 16,		316
son, aged 14,		195
		<hr/> \$933

CONDITION.—Family numbers 8, parents and 6 children from five to sixteen years of age; three go to school. Have a tenement of 6 rooms, well situated, and with good surroundings. House is well furnished, and parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, and what was left from dinner, coffee.
Dinner. Meat, potatoes, cabbage, bread and pie.
Supper. Bread, butter, sometimes fish, and tea.

COST OF LIVING,				\$943
Rent, \$200 00	Fish, \$9 00	Dry goods,		\$31 00
Fuel, 51 76	Milk, 18 23	Papers,		3 00
Groceries, . . . 403 37	Boots and shoes, . 37 00	Sundries,		16 11
Meat, 101 62	Clothing, 76 00			

No. 300.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$408
son, aged 14,		200
		<hr/> \$608

CONDITION.—Family numbers 4, parents and 2 children, nine and fourteen years of age; one goes to school. Occupy a tenement of 4 rooms, which is well situated. The house is moderately well furnished; the family is decently dressed and attends church.

FOOD.—*Breakfast.* Bread, butter, what was left from dinner, and coffee.
Dinner. Meat or fish, potatoes, sometimes vegetables, and bread.
Supper. Bread, butter, salt fish and tea.

COST OF LIVING,			\$608
Rent, \$96 00	Fish, \$13 80	Dry goods, . . .	\$19 00
Fuel, 48 00	Milk, 14 36	Sundries, . . .	20 30
Groceries, . . . 271 33	Boots and shoes, . . 29 00	Religion, . . .	10 00
Meat, 54 21	Clothing, 33 00		

No. 301.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$371
son, aged 16,		290
son, aged 14,		180
		<hr/> \$841

CONDITION.—Family numbers 7, parents and 5 children from two to sixteen years of age; two go to school. Occupy a tenement of 6 rooms, well situated, with clean and pleasant surroundings. House is well furnished, and parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat or fish, potatoes, tea.
Dinner. Meat, potatoes, cabbage, bread, pie.
Supper. Bread, butter, sometimes cheese, gingerbread, tea.

COST OF LIVING,			\$827 46
Rent, \$132 00	Fish, \$10 60	Dry goods, . . .	\$23 00
Fuel, 53 00	Milk, 18 30	Papers,	6 00
Groceries, . . . 359 92	Boots and shoes, . . 36 00	Sundries, . . .	16 50
Meat, 91 14	Clothing, 81 00		

No. 302.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$442

CONDITION.—Family numbers 5, parents and 3 children from one to nine years of age; two go to school. Father never attended school, and thinks his children will have sufficient schooling before they reach their tenth year; thinks no advantage will be gained from longer attendance at school; so children will be put to work as soon as able. Live in a tenement of 4 rooms, in a very poor locality, surrounded by poverty. Father worked ten months of last year at wages ranging from \$1.25 to \$2 per day. Rents a small piece of land and raises potatoes and cabbages; also keeps a pig, and occasionally sells some pork.

FOOD.—*Breakfast.* Bread, butter, salt pork or fish, potatoes, coffee.
Dinner. Bread, fresh meat, ham or fish, potatoes, cabbage, sometimes turnips or other vegetables, and water.
Supper. Bread, butter, sometimes fish or pork, pie or gingerbread. Baked beans, pork and cabbage, each once a week.

COST OF LIVING,			\$432
Rent, \$100 00	Meat, \$36 00	Clothing, boots and shoes,	\$35 00
Fuel, 30 50	Fish, 16 00	Sundries, . . .	9 75
Groceries, . . . 180 75	Milk, 24 00		

No. 333.	LABORER, OUT-DOOR.	Fish.
EARNINGS of father,		\$406
daughter, aged 16,		210
son, aged 14,		196
		<hr/> \$812

CONDITION.—Family numbers 6, parents and 4 children from six to sixteen years of age; two go to school. Have a tenement of 4 rooms, in a fair locality. House moderately well furnished and clean. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, and what was left from dinner, coffee.
Dinner. Meat, potatoes, cabbage and bread.
Supper. Bread, butter, gingerbread, tea.

COST OF LIVING,				\$313
Rent, \$120 00	Fish, \$12 54	Dry goods,		\$37 06
Fuel, 47 00	Milk, 23 32	Sundries,		26 63
Groceries, . . . 883 56	Boots and shoes, . . 22 00			
Meat, 98 89	Clothing, 51 50			

No. 339.	LABORER, OUT-DOOR.	Fish.
EARNINGS of father,		\$425
son, aged 13,		120
son, aged 12,		130
		<hr/> \$675

CONDITION.—Family numbers 7, parents and 5 children from nine months to thirteen years of age; one goes to school. Occupy a tenement of 5 rooms, in a good locality. House is poorly furnished. Family dresses moderately well.

FOOD.—*Breakfast.* Bread, butter, salt pork or fish, coffee.
Dinner. Meat, potatoes, cabbage and bread.
Supper. Bread, butter, tea.

COST OF LIVING,				\$663
Rent, \$96 00	Fish, \$13 00	Dry goods,		\$13 50
Fuel, 34 25	Milk, 18 20	Sundries,		25 65
Groceries, . . . 829 85	Boots and shoes, . . 14 75			
Meat, 73 40	Clothing, 22 00			

No. 340.	LABORER, OUT-DOOR.	Fish.
EARNINGS of father,		\$429 50
daughter, aged 14,		186 00
		<hr/> \$615 50

CONDITION.—Family numbers 5, parents and 3 children from five to fourteen years of age; two go to school. Live in a tenement of 4 rooms, with good surroundings. The apartments are moderately well furnished. Family dresses well on Sunday.

FOOD.—*Breakfast.* Bread, butter, potatoes, coffee.
Dinner. Bread, meat or fish, potatoes, cabbage.
Supper. Bread, butter and tea.

COST OF LIVING,				\$615 50
Rent, \$120 00	Fish, \$6 80	Dry goods,		\$12 30
Fuel, 38 00	Milk, 12 40	Religion,		10 00
Groceries, . . . 298 42	Boots and shoes, . . 15 00	Sundries,		25 80
Meat, 46 29	Clothing, 32 80			

No. 341.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$447
son, aged 12,		135
		<hr/> \$582

CONDITION.—Family numbers 6, parents and 4 children from one to twelve years of age; one goes to school. Have a tenement of 4 rooms; the surroundings would be good, but they are very untidily kept; all the refuse from the house is thrown into the yard, besides the sink-drainings. House meanly furnished and dirty. Family dresses poorly, but saves money.

Food. — <i>Breakfast.</i>	Bread, butter and coffee.				
<i>Dinner.</i>	Meat or fish, potatoes; cabbage and salt pork two days per week.				
<i>Supper.</i>	Bread, butter and tea.				
COST OF LIVING,	.	.	.	\$563	
Rent,	\$34 00	Fish,	\$7 28	Dry goods,	\$11 25
Fuel,	19 25	Milk,	16 80	Sundries,	6 18
Groceries,	329 20	Boots and shoes,	12 00		
Meat,	46 54	Clothing,	30 50		

No. 342.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$449
son, aged 13,		138
		<hr/> \$587

CONDITION.—Family numbers 5, parents and 3 children from two to thirteen years of age; one goes to school. Occupy a tenement of 4 rooms, in a good locality. House is moderately well furnished. Family dresses fairly.

FOOD.— <i>Breakfast.</i>	Bread, butter, coffee.				
<i>Dinner.</i>	Meat, potatoes, cabbage and pork once a week, bread.				
<i>Supper.</i>	Bread, butter and tea.				
COST OF LIVING,	.	.	.	.	\$587
Rent,	.	.	.	\$96 00	Fish, \$5 43
Fuel,	.	.	.	38 50	Milk, 10 68
Groceries,	.	.	.	239 40	Boots and shoes, 19 00
Meat,	.	.	.	56 10	Clothing, 23 60
					Dry goods, \$20 00
					Sundries, 23 29

No. 343.	LABORER, OUT-DOOR.	<i>Irish.</i>
EARNINGS of father,		\$408
son, aged 15,		200
		<hr/> \$608

CONDITION.—Family numbers 6, parents and 4 children from two to fifteen years of age; one goes to school. Live in 4 rooms in an overcrowded tenement-block in a disagreeable and unhealthy neighborhood; they have but very little yard-room, and that little is covered with filth and garbage. The apartments are poorly furnished, and unclean. Family dresses miserably.

FOOD.— <i>Breakfast.</i>	Bread, butter, potatoes, coffee.		
<i>Dinner.</i>	Bread, meat, sometimes salt pork and cabbage, potatoes.		
<i>Supper.</i>	Bread, butter and tea.		
COST OF LIVING,	.	.	\$608
Rent,	.	\$120 00	Fish, \$14 00
Fuel,	.	33 00	Milk, 17 56
Groceries,	.	289 91	Boots and shoes, . 14 00
Meat,	.	63 79	Clothing, . . . 31 00
			Dry goods, . . \$10 50
			Sundries, . . 14 24

No. 344.	LABORER, OUT-DOOR.	Fish.
EARNINGS of father,		\$391
son, aged 16,		244
		<hr/> \$635

CONDITION.—Family numbers 7, parents and 5 children from eight months to sixteen years of age; one goes to school. Have a tenement of 4 rooms, in a poor neighborhood and with poor surroundings. House miserably furnished. Family dresses poorly and is in debt.

FOOD.—*Breakfast.* Bread, butter, potatoes and coffee.

Dinner. Meat, potatoes, bread; cabbage and salt pork one day per week.

Supper. Bread, butter, tea.

COST OF LIVING,				\$650
Rent, \$120 00	Fish, \$14 00	Dry goods,	\$12 00	
Fuel, 30 50	Milk, 21 00	Sundries,	21 51	
Groceries, . . . 334 29	Boots and shoes, . .	15 30		
Meat, 66 80	Clothing,	23 00		

No. 345.	LABORER, IN SHIP-YARD.	Fish.
EARNINGS of father, in shop,		\$308
father, on wharf,		97
son, aged 13,		200
		<hr/> \$605

CONDITION.—Family numbers 7, parents and 5 children from two to thirteen years of age; two go to school. Have a tenement of 5 rooms, in a poor locality, with unpleasant surroundings, situated in a narrow street. The rear of the house is very disagreeable, as the sink-water runs through the yard; there are, besides, coal and other ashes heaped up; in fact, there is nothing neat about the premises. The inside of the house is nearly as disagreeable as the outside, for the floors are bare and the furniture scanty. Family attends church; dresses well on Sunday, but poorly during the week.

FOOD.—*Breakfast.* Bread, butter, potatoes, salt fish or salt pork, and coffee.

Dinner. Meat or fish, potatoes, cabbage, bread, sometimes pie. Boiled cabbage and pork once per week, and fish one day.

Supper. Bread, butter, what is left from dinner, gingerbread and tea.

COST OF LIVING,				\$606 79
Rent, \$66 00	Fish, \$12 00	Dry goods,	\$12 00	
Fuel, 36 50	Milk, 17 00	Sundries,	21 00	
Groceries, . . . 286 95	Boots and shoes, . .	29 00		
Meat, 49 50	Clothing,	74 75		

No. 346.	LABORER, ON STREETS.	Fish.
EARNINGS of father,		\$436
wife,		200
		<hr/> \$636

CONDITION.—Family numbers 6, parents and 4 children from two to thirteen years of age; two go to school. Have a tenement of 8 rooms, in a poor locality. The house is meanly furnished and dirty. The mother goes out cleaning and washing; therefore has no time to keep her own house clean. Family dresses poorly.

FOOD.—*Breakfast.* Bread, butter and coffee.

Dinner. Meat or fish, potatoes and bread.

Supper. Bread, butter and tea.

COST OF LIVING,				\$651 40
Rent, \$126 00	Fish, \$4 29	Dry goods,	\$14 00	
Fuel, 30 25	Milk, 17 20	Sundries,	9 30	
Groceries, . . . 376 25	Boots and shoes, . .	12 00		
Meat, 50 40	Clothing,	21 80		

No. 347. LABORER, ON STREET.		Irish.
EARNINGS of father,		\$458
son, aged 14,		200
		<hr/> \$657

CONDITION.—Family numbers 5, parents and 3 children from one to fourteen years of age; one goes to school. Occupy a tenement of 3 rooms, in a poor neighborhood. The house is out of repair and the roof leaks; windows are broken, and plastering falls from the ceiling. The house throughout is very poorly furnished. Family dresses moderately well.

FOOD.—*Breakfast.* Bread and butter, potatoes, coffee.
Dinner. Meat or fish, potatoes, bread.
Supper. Bread, butter, tea.

COST OF LIVING,		\$667
Rent, \$120 00	Fish, \$10 37	Dry goods, . . . \$17 76
Fuel, 40 22	Milk, 20 00	Sundries, 10 35
Groceries, . . 327 90	Boots and shoes, . 19 00	
Meat, 72 80	Clothing, 28 60	

No. 348. LABORER, ON STREET.		Irish.
EARNINGS of father,		\$446
son, aged 13,		169
		<hr/> \$615

CONDITION.—Family numbers 5, parents and 3 children from one to thirteen years of age; one goes to school. Live in a tenement of 3 rooms, in the second story of a large block; the locality is very poor. The apartments are poorly furnished and in bad condition. Family dresses miserably.

FOOD.—*Breakfast.* Bread, butter, coffee.
Dinner. Meat or fish, potatoes, sometimes cabbage.
Supper. Bread, butter, tea.

COST OF LIVING,		\$615
Rent, \$96 00	Fish, \$10 30	Dry goods, . . . \$10 60
Fuel, 33 00	Milk, 14 00	Sundries, 17 00
Groceries, . . 247 89	Boots and shoes, . 11 50	
Meat, 48 62	Clothing, 26 00	

No. 349. LABORER, ON WHARF.		F. Canadian.
EARNINGS of father,		\$430
at jobbing,		80
		<hr/> \$510

CONDITION.—Family numbers 6, parents and 4 children from one to nine years of age. Have a tenement of 3 rooms in the third story of a twelve-tenement block; the rooms are small and out of repair; also poorly furnished. Family dresses miserably and looks haggard.

FOOD.—*Breakfast.* Bread, butter and coffee.
Dinner. Meat or fish, potatoes and bread.
Supper. Bread, molasses and tea.

COST OF LIVING,		\$555 38
Rent, \$108 00	Meat, \$40 60	Clothing, \$30 50
Fuel, 22 00	Fish, 6 84	Dry goods, 9 94
Groceries, . . 328 38	Boots and shoes, . 11 00	Sundries, 8 18

No. 350.	LABORER, ON WHARF.	Irish.
EARNINGS of father,		\$308
wife,		120
		<hr/> \$428

CONDITION.—Family numbers 5, parents and 8 children from one to nine years of age; one goes to school. Occupy a tenement of 3 rooms, in a very poor locality. The yard is covered with refuse and sink-drainings, and is really disgusting. House is poorly furnished; one table, three chairs and a stove comprise the furniture in the living-room. The walls are black with smoke, and look as though they had not been whitewashed for ten years. Family is ill-dressed.

FOOD.—*Breakfast.* Bread, and sometimes butter, coffee.
Dinner. Meat or fish three times a week, potatoes, bread.
Supper. Bread, butter and tea.

COST OF LIVING,			\$428
Rent, \$120 00	Fish, \$4 80	Dry goods,	\$8 40
Fuel, 19 30	Milk, 6 00	Sundries,	7 20
Groceries, . . . 211 30	Boots and shoes, . . 7 50		
Meat, 31 50	Clothing, 12 00		

No. 351.	LABORER, ON WHARF.	Irish.
EARNINGS of father,		\$321
wife,		110
		<hr/> \$431

CONDITION.—Family numbers 6, parents and 8 children from two to ten years of age. Live in 3 rooms in a tenement-block, with miserable surroundings. The apartments are poorly furnished, and inconvenient. Family ill-dressed. The mother goes out washing, and the father worked but very little last year; would have starved if they had not received assistance; most of their clothing was given to them. The fuel used by this family is picked from the streets by the children.

FOOD.—*Breakfast.* Bread, coffee sweetened with molasses.
Dinner. Bread, meat twice per week, potatoes.
Supper. Bread, sometimes butter, coffee.

COST OF LIVING,			\$431
Rent, \$96 00	Fish,		\$4 40
Groceries, 199 53	Sundries,		9 67
Meat, 21 40			

No. 352.	LABORER, ON WHARF.	Irish.
EARNINGS of father,		\$422
son, aged 16,		248
		<hr/> \$670

CONDITION.—Family numbers 6, parents and 4 children from five to sixteen years of age; three go to school. Have a tenement of 5 rooms, well situated, and with good surroundings. House well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat or fish, gingerbread and coffee.
Dinner. Bread, butter, meat, potatoes, cabbage and pie.
Supper. Bread, butter, cheese or fish, and tea.

COST OF LIVING,			\$670
Rent, \$120 00	Fish, \$9 00	Dry goods,	\$14 50
Fuel, 88 00	Milk, 12 00	Papers,	3 00
Groceries, . . . 208 93	Boots and shoes, . . 30 00	Sundries,	21 27
Meat, 72 00	Clothing, 55 00		

No. 353.

LABORER, ON WHARF.

Irish.

EARNINGS of father, \$548

CONDITION.—Family numbers 4, parents and 2 children from one to three years of age. Occupy a tenement of 4 rooms, with naturally good surroundings; but too much dirt is allowed to accumulate, both in and around the houses, which renders them very undesirable, and the consequence is, that they are occupied by the lowest class. House is poorly furnished and dirty. Family is ill-dressed.

FOOD.—*Breakfast.* Pork or fish, potatoes, bread, coffee.*Dinner.* Meat or fish, potatoes; cabbage, twice a week, boiled with salt pork, bread.*Supper.* Bread, butter, tea.

COST OF LIVING, \$548

Rent, \$120 00	Fish, \$16 80	Dry goods, . . . \$12 00
Fuel, 19 00	Milk, 12 40	Sundries, 26 06
Groceries, . . . 241 60	Boots and shoes, . 12 00	
Meat, 49 40	Clothing, 28 75	

No. 354.

QUARRYMAN.

Irish.

EARNINGS of father, \$556
 son, aged 16, 206
 \$762

CONDITION.—Family numbers 6, parents and 4 children from three to sixteen years of age; two go to school. Live in a tenement of 5 rooms, in a good locality, with pleasant surroundings. The apartments are well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, what was left from dinner, coffee.*Dinner.* Bread, meat or fish, potatoes, sometimes vegetables.*Supper.* Bread, butter, gingerbread, tea.

COST OF LIVING, \$764 51

Rent, \$120 00	Fish, \$8 72	Dry goods, . . . \$14 00
Fuel, 44 30	Milk, 14 20	Papers, 6 00
Groceries, . . . 377 40	Boots and shoes, . 22 50	Sundries, 18 00
Meat, 83 39	Clothing, 46 00	

No. 355.

QUARRYMAN.

Irish.

EARNINGS of father, \$540

CONDITION.—Family numbers 5, parents and 3 children from five to twelve years of age; all go to school. Have a tenement of 4 rooms, with good surroundings. House meanly furnished. Family dresses poorly.

FOOD.—*Breakfast.* Bread, butter and coffee.*Dinner.* Meat or fish, potatoes and bread.*Supper.* Bread, butter and tea.

COST OF LIVING, \$540

Rent, \$96 00	Fish, \$6 16	Dry goods, . . . \$8 50
Fuel, 33 60	Milk, 26 26	Sundries, 12 31
Groceries, . . . 261 47	Boots and shoes, . 12 00	
Meat, 49 80	Clothing, 24 30	

No. 356.

SHOREMAN.

American.

EARNINGS of father, \$673

CONDITION.—Family numbers 5, parents and 3 children from one to eight years of age; one goes to school. Occupy a tenement of 5 rooms, in a good and healthy locality. The house is well furnished, and parlor carpeted. Have a sewing-machine. Parents and children dress well and respectably, but cannot save money, as it takes all the father earns to keep the family.

FOOD.—*Breakfast.* Hot biscuit, butter, cold meat or eggs, cake, tea.*Dinner.* Meat or fish, potatoes, vegetables, pickles, bread, butter, pie or pudding, tea.*Supper.* Bread, butter, graham bread, cheese, sauce and cake, tea.

COST OF LIVING, \$499 45

Rent,	\$112 00	Fish,	\$13 00	Dry goods,	\$19 00
Fuel,	42 70	Milk,	15 22	Sundries,	25 00
Groceries,	269 73	Boots and shoes,	37 95		
Meat,	61 85	Clothing,	73 00		

No. 357.

SHOREMAN.

Irish.

EARNINGS of father, \$648

son, aged 14, 210

\$658

CONDITION.—Family numbers 7, parents and 5 children from one to sixteen years of age; two go to school, and the eldest, a girl, attends school and performs the greater part of the housework. Live in a tenement of 6 rooms, well situated, in a good and healthy neighborhood. Family dresses well and attends church; the children are very intelligent. The father has some money in savings bank, but prefers to see family comfortable and the children educated rather than save money. Could not support family without aid of the son.

FOOD.—*Breakfast.* Bread, butter, cold meat or fish, warmed potatoes, gingerbread, coffee.*Dinner.* Bread, butter, meat, potatoes; vegetables, pie or pudding.*Supper.* Bread, butter, fish or cheese, cake, pie, tea.

COST OF LIVING, \$538 50

Rent,	\$120 00	Fish,	\$23 75	Dry goods,	\$21 00
Fuel,	47 75	Milk,	26 40	Religion,	10 00
Groceries,	362 50	Boots and shoes,	31 90	Books and papers,	7 50
Meat,	63 00	Clothing,	97 50	Sundries,	30 00

No. 358.

TEAMSTER.

American.

EARNINGS of father, \$725

CONDITION.—Family numbers 4, parents and 2 children of six and fourteen years of age; both go to school. Have a tenement of 4 rooms, situated in a good neighborhood, and with clean surroundings. The rooms are well furnished, and the parlor carpeted. Have a sewing-machine. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, and what was left from dinner, coffee.*Dinner.* Bread, butter, meat, potatoes, pie.*Supper.* Bread, butter, cheese or fish, and tea.

COST OF LIVING, \$725

Rent,	\$180 00	Fish,	\$6 02	Dry goods,	\$29 00
Fuel,	34 25	Milk,	16 20	Papers,	10 00
Groceries,	290 89	Boots and shoes,	20 00	Sundries,	29 94
Meat,	75 40	Clothing,	41 80		

No. 359.

TEAMSTER.

English.

EARNINGS of father,	\$616
son, aged 14,	186
	<hr/> \$802

CONDITION.—Family numbers 5, parents and 3 children from six to fourteen years of age; two go to school. Occupy a tenement of 5 rooms, in a poor locality, with unpleasant surroundings; sanitary arrangements are imperfect. There are no proper means to carry off the sink-water, and it has to run into the yard; the privy is too near the house and is exposed to the street. House is clean and moderately well furnished, with sitting-room carpeted. Had considerable sickness in family last year and ran in debt, but have liquidated it since, although cannot save money now.

FOOD.— <i>Breakfast.</i>	Bread, butter, cold meat or what was left from dinner, cake, coffee.
<i>Dinner.</i>	Meat, potatoes, sometimes vegetables, bread, pie.
<i>Supper.</i>	Bread, butter, cold meat or fish, cake, tea.

COST OF LIVING,				\$855	
Rent,	\$144 00	Fish,	\$9 60	Dry goods,	\$24 80
Fuel,	47 00	Milk,	15 35	Papers,	3 00
Groceries,	382 40	Boots and shoes,	30 00	Sundries, including	
Meat,	91 75	Clothing,	43 50	doctor's bill,	63 60

No. 360.

TEAMSTER.

English.

EARNINGS of father,	\$608
son, aged 15,	220
	<hr/> \$828

CONDITION.—Family numbers 5, parents and 3 children from six to fifteen years of age; two go to school. Live in a tenement of 6 rooms, in a good locality. The apartments are well furnished, and parlor carpeted. Own a sewing-machine. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat, coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pie or pudding.
<i>Supper.</i>	Bread, butter, cheese, gingerbread, tea.

COST OF LIVING,			\$809 53
Rent, \$200 00	Milk, \$13 18	Books and papers, . \$12 00	
Fuel, 39 00	Boots and shoes, . 30 00	Societies, 8 00	
Groceries, . . . 312 16	Clothing, 55 25	Sundries, 16 20	
Meat, 103 74	Dry goods, 20 00		

No. 361.

TEAMSTER.

English.

EARNINGS of father,	\$683
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CONDITION.—Family numbers 3, parents and 1 child three years of age. Have a tenement of 3 rooms, in a good neighborhood, with pleasant surroundings. The house is well furnished and the rooms carpeted. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, cheese or fish, gingerbread and coffee.
<i>Dinner.</i>	Meat, potatoes, sometimes vegetables, bread, pie.
<i>Supper.</i>	Bread, butter, sauce and tea.

COST OF LIVING,				\$668
Rent, \$144 00	Fish, \$4 50	Dry goods, \$24 00		
Fuel, 36 80	Milk, 25 40	Papers, 6 00		
Groceries, . . . 249 40	Boots and shoes, . 19 20	Societies, 7 00		
Meat, 83 10	Clothing, 44 50	Sundries, 23 80		

No. 362.	TEAMSTER.	Fish.
EARNINGS of father,		\$630
son, aged 14,		226
		\$856

CONDITION.—Family numbers 6, parents and 3 children from eight to fourteen years of age; two go to school. Occupy a tenement of 4 rooms, in a good locality. House is moderately well furnished. Family dresses well.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat, potatoes, coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, cabbage.
<i>Supper.</i>	Bread, butter, cold meat or fish, gingerbread, tea.

COST OF LIVING,				\$306
Rent, \$150 00	Fish, \$14 00	Dry goods, . . . \$22 00		
Fuel, 36 50	Milk, 17 80	Papers, 4 00		
Groceries, . . . 317 76	Boots and shoes, . 31 50	Sundries, 35 47		
Meat, 90 57	Clothing, 88 40			

No. 363.	TEAMSTER.	Fish.
EARNINGS of father,		\$425

CONDITION.—Family numbers 7, parents and 5 children from one to nine years of age; two go to school. Live in a tenement of 5 rooms, in a poor locality. The house is in a miserable condition; the clapboards and shingles have fallen off in some places; the conductors are out of order and the water from the sink runs into the yard, which is already covered with green slime; the coal-ashes and other refuse from the house is thrown into this yard. The apartments are poorly furnished and on a par with the surroundings. Family ill-dressed.

FOOD.— <i>Breakfast.</i>	Bread, butter, salt fish or pork, potatoes, coffee.
<i>Dinner.</i>	Bread, meat or fish, potatoes, cabbage.
<i>Supper.</i>	Bread, butter, sometimes fish or cheese, gingerbread, tea.

COST OF LIVING,			\$613
Rent, \$96 00	Fish, \$18 60	Dry goods, . . . \$16 00	
Fuel, 34 00	Milk, 17 90	Sundries, 23 50	
Groceries, . . . 231 75	Boots and shoes, . 27 00		
Meat, 59 75	Clothing, 43 50		

Skilled.	SHOP TRADES.	24 Families.
No. 364.	CABINET-MAKER.	America.

EARNINGS of father,	\$599
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CONDITION.—Family numbers 4, parents and 2 children of six and nine years of age; both go to school. Live in the suburbs, in a tenement of 4 rooms, in a pleasant neighborhood with good surroundings. The apartments are well furnished and are carpeted. Own a piano, also a sewing-machine. Family dresses well and attends church.

FOOD.— <i>Breakfast.</i>	Hot biscuits, butter, meat or eggs, cake, tea.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pie or pudding, tea.
<i>Supper.</i>	Bread, butter, fruit or sauce, cake, tea.

COST OF LIVING,				\$330 25
Rent, \$192 00	Fish,	\$6 80	Dry goods, . . .	\$21 00
Fuel, 41 76	Milk,	38 00	Papers,	10 00
Groceries, . . . 261 89	Boots and shoes, .	30 00	Religion,	24 00
Meat, 99 50	Clothing,	60 78	Sundries,	33 00

No. 365.

CARRIAGE-PAINTER.

American.

EARNINGS of father, \$861

CONDITION.—Family numbers 4, parents and 2 children from two to seven years of age; one child goes to school. Occupy a tenement of 7 rooms, in a very pleasant locality, with ample room around the house for yard purposes; house is well ventilated, the drainage good, and surroundings neat and clean. The parlor and bedrooms are carpeted. Have a sewing-machine. Family dresses well and attends church. Have plenty of spare time to devote to improvement and education of children; usually have two weeks' recreation. The father is not paid for his labor every month; sometimes they don't settle for six months, but would like it oftener, if possible. Worked last year 246 days, at \$3.50 a day.

FOOD.—*Breakfast.* Hot biscuit, butter, meat or eggs, pie or cake, tea.

Dinner. Bread, butter, meat, potatoes, vegetables, pickles, fruit in season, pudding, pie, tea.

Supper. Bread and butter, sauce or preserves, cheese, crackers, cake and doughnuts, tea. Baked beans Saturday night, and fish for dinner once a week.

COST OF LIVING, \$743 20

Rent, . . . \$144 00	Milk, . . . \$14 80	Religion, . . . \$20 00
Fuel, . . . 51 75	Boots and shoes, . 27 50	Societies, . . . 6 00
Groceries, . . 246 90	Clothing, . . . 96 00	Sundries, . . . 30 00
Meat, . . . 64 25	Dry goods, . . . 17 00	
Fish, . . . 12 00	Books and papers, . 13 00	

No. 366.

CARRIAGE-SMITH.

American.

EARNINGS of father, \$887 25

CONDITION.—Family numbers 7, parents and 5 children from four to sixteen years of age; four go to school. Have a tenement of 7 rooms, well situated, in a healthy neighborhood, and convenient to work. House is well furnished, parlor and some of the bedrooms carpeted. Have a piano and sewing-machine. The father can keep the family comfortable, but cannot save money; has a paid-up life insurance policy of \$2,000. The wife and daughter make all the clothes except the father's.

FOOD.—*Breakfast.* Hot biscuit, graham bread, butter, cold meat or fish, ham and eggs, cake or pie, and tea.

Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pudding, pie, cheese and tea.

Supper. Bread and butter, cheese, preserves or canned fruit, cake, pie and tea. Baked beans on Saturday night and Sunday morning. Have no dinner on Sunday.

COST OF LIVING, \$887 25

Rent, . . . \$144 00	Fish, . . . \$23 25	Dry goods, . . . \$46 50
Fuel, . . . 64 50	Milk, . . . 23 90	Religion, . . . 18 00
Groceries, . . 354 00	Boots and shoes, . 42 60	Books and papers, . 13 50
Meat, . . . 82 75	Clothing, . . . 48 00	Sundries, . . . 36 25

No. 367.

CARRIAGE-TRIMMER.

American.

EARNINGS of father, \$572 25

CONDITION.—Family numbers 6, parents and 4 children from two to twelve years of age; three go to school. Live in a tenement of 6 rooms, in a pleasant and healthy neighborhood. The apartments are neat, clean, and the chambers and parlor carpeted; the kitchen is covered with oil-cloth. Have a sewing and a wringing machine. Mother makes her own and children's garments. Family dresses well and is very intelligent. Has some money in savings bank, but cannot save much and live comfortably; wishes success to the bureau. Father worked last year 269 days, at \$3.25 per day. In this town there is a good field for investigation into the condition of the homes of the working-classes.

FOOD.—*Breakfast.* Bread, butter, ham, eggs or sausages, with warmed potatoes, cake, pie, tea.

Dinner. Bread, butter, meat, potatoes, vegetables, cheese; pie or pudding, tea.

Supper. Bread, butter, sometimes fish, sauce, cheese, cake, pie, tea. Have baked beans latter part of the week.

COST OF LIVING, \$558 70

Rent, . . . \$144 00	Fish, . . . \$17 00	Dry goods, . . \$39 00
Fuel, . . . 47 75	Milk, . . . 27 40	Religion, . . 14 00
Groceries, . . 339 75	Boots and shoes, . 30 00	Sundries, . . 48 00
Meat, . . . 86 00	Clothing, . . . 74 00	

No. 368.

CIGAR-MAKER.

American.

EARNINGS of father, \$300

CONDITION.—Family numbers 3, parents and 1 child six years of age, who goes to school. Occupy a tenement of 4 rooms, situated in a good neighborhood, with clean and healthy surroundings. The house is well furnished and parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake, coffee.

Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, tea.

Supper. Bread, butter, sauce, tea. Baked beans Saturday night.

COST OF LIVING, \$765

Rent, . . . \$144 00	Fish, . . . \$7 50	Dry goods, . . \$16 00
Fuel, . . . 51 00	Milk, . . . 18 48	Papers, . . 8 00
Groceries, . . 284 29	Boots and shoes, . 36 00	Societies, . . 8 00
Meat, . . . 90 00	Clothing, . . . 72 00	Sundries, . . 29 13

No. 369.

CIGAR-MAKER.

English.

EARNINGS of father, \$910

daughter, aged 17, 230

\$1,139

CONDITION.—Family numbers 6, parents and 4 children from one and one-half to seventeen years of age. Have an upper tenement of 5 rooms, in a very good locality; the surroundings are neat and healthy. The house is well furnished and the parlor and bedrooms are carpeted. Have a sewing-machine. Family dresses well and is very respectable. The father can save money, but would rather have his family comfortable, even if he does not save anything.

FOOD.—*Breakfast.* Bread, butter, meat, potatoes, cake, pie, tea and coffee.

Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pudding, cake, fruit and tea.

Supper. Bread, butter, cold meat, or fish or cheese and onions, sauce, cake or pie, tea.

COST OF LIVING, \$1,760

Rent, . . . \$150 00	Milk, . . . \$25 60	Books and papers, . \$14 50
Fuel, . . . 63 00	Boots and shoes, . 47 00	Charity, . . 25 00
Groceries, . . 422 98	Clothing, . . 153 00	Sundries, . . 46 70
Meat, . . . 138 22	Dry goods, . . 43 00	
Fish, . . . 16 00	Societies, . . 6 00	

No. 370.

CIGAR-MAKER.

Irish.

EARNINGS of father,	\$630
son, aged 16,	360
	<hr/> \$1,190

CONDITION.—Family numbers 6, parents and 4 children from three to sixteen years of age; two go to school. Live in a tenement of 6 rooms, pleasantly situated, and surrounded with a garden, which is planted with flowers and vegetables. The apartments are well furnished, and rooms carpeted; everything about the house, both inside and outside, indicates comfort.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat, eggs and ham or boiled eggs, cake, coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, cheese.
<i>Supper.</i>	Bread, butter, cold meat, cheese or fish, pie, cake, tea.

COST OF LIVING,			\$1,085
Rent, . . . \$180 00	Milk, . . . \$23 68	Books and papers, . . \$22 00	
Fuel, . . . 59 00	Boots and shoes, . . 51 10	Furniture, . . . 42 00	
Groceries, . . 397 73	Clothing, . . . 109 00	Sundries, . . . 31 60	
Meat, . . . 113 89	Dry goods, . . . 32 50		
Fish, . . . 13 50	Societies, . . . 9 00		

No. 371.

FURNITURE-MAKER.

American.

EARNINGS of father,	\$828
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CONDITION.—Family numbers 4, parents and 2 children three and five years of age; one goes to school. Occupy a tenement of 5 rooms, pleasantly situated in a good neighborhood, with small garden attached. House is well furnished, with parlor carpeted. Family dresses well and attends church.

FOOD.— <i>Breakfast.</i>	Bread, butter, fresh steak or eggs, cake, tea.
<i>Dinner.</i>	Brown and white bread, butter, meat, potatoes, vegetables, pickles, pie, tea.
<i>Supper.</i>	Bread, butter, cheese, sauce or fish, tea.

COST OF LIVING,				\$774	
Rent,	\$100 00	Fish,	\$8 00	Dry goods,	\$29 00
Fuel,	49 75	Milk,	19 30	Papers,	13 00
Groceries,	258 05	Boots and shoes,	30 25	Religion,	20 00
Meat,	94 20	Clothing,	120 00	Sundries,	32 45

No. 372.

HATTER.

Irish.

EARNINGS of father,	\$780
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CONDITION.—Family numbers 5, parents and 3 children from three to nine years of age; two go to school. Have a tenement of 5 rooms, well situated, having pleasant surroundings and a small garden. The rooms are well furnished, and the parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.— <i>Breakfast.</i>	Bread, butter, meat, potatoes, cake and coffee.
<i>Dinner.</i>	Bread, butter, meat, potatoes, vegetables, pudding or pie.
<i>Supper.</i>	Bread, butter, cheese or fish, pie and tea.

COST OF LIVING,				\$780	
Rent,	\$144 00	Fish,	\$10 00	Dry goods,	\$19 50
Fuel,	49 00	Milk,	15 00	Papers,	5 00
Groceries,	322 36	Boots and shoes,	24 00	Religion,	15 00
Meat,	79 21	Clothing,	49 00	Sundries,	47 33

No. 373.	HATTER.	Fish.
EARNINGS of father,		\$648
daughter, aged 15,		284
		<hr/> \$932

CONDITION.—Family numbers 6, parents and 4 children from two to fifteen years of age; one goes to school. Live in a cottage of 6 rooms, with good and pleasant surroundings, and a garden. The house is well furnished and the parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat, potatoes, coffee.
Dinner. Meat, potatoes, bread, pie and tea.
Supper. Bread, butter, fish or cheese, and tea.

COST OF LIVING,					\$932
Rent, \$180 00	Fish,	\$12 46	Dry goods,	\$20 50	
Fuel, 50 00	Milk,	16 20	Sundries,	14 00	
Groceries, . . . 430 86	Boots and shoes, . .	20 00			
Meat, 108 38	Clothing,	61 00			

No. 374.	HATTER.	Fish.
EARNINGS of father,		\$748

CONDITION.—Family numbers 4, parents and 3 children of two and four years of age. Live in a tenement of 4 rooms, in a good locality. House is well furnished and parlor carpeted. Have a piano and sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or fish, tea.
Dinner. Meat, potatoes, vegetables, bread, pudding.
Supper. Bread, butter, gingerbread, tea.

COST OF LIVING,					\$726
Rent, \$120 00	Fish,	\$9 40	Dry goods,	\$17 00	
Fuel, 48 00	Milk,	22 60	Papers,	9 00	
Groceries, . . . 319 82	Boots and shoes, . .	21 50	Religion,	14 00	
Meat, 86 48	Clothing,	46 00	Sundries,	11 20	

No. 375.	MECHANIC.	American.
EARNINGS of father,		\$530

CONDITION.—Family numbers 5, parents and 3 children from four to nine years of age; two go to school. Live in a tenement of 5 rooms, conveniently situated, and with good surroundings. The house is well furnished and the rooms are carpeted. Have a piano and sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, ham and eggs, or cold meat, cake and tea.
Dinner. Graham-bread, butter, meat, potatoes, vegetables, pickles, pie and tea.
Supper. Bread, butter, sauce or preserved fruit, gingerbread and tea. Beans Sunday morning.

COST OF LIVING,					\$777 75
Rent, \$133 00	Fish,	\$9 00	Dry goods,	\$23 00	
Fuel, 51 00	Milk,	13 60	Papers,	8 00	
Groceries, . . . 327 90	Boots and shoes, . .	18 00	Religion,	14 00	
Meat, 53 25	Clothing,	59 00	Sundries,	30 00	

No. 376.

MECHANIC.

American.

EARNINGS of father, \$696

CONDITION.—Family numbers 4, parents and 2 children of two and seven years of age; both attend school. Live in a tenement of 5 rooms, in a good neighborhood, with pleasant and healthy surroundings. House is well furnished, with parlor carpeted. Have a sewing-machine. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat or eggs, gingerbread, coffee.
Dinner. Meat, potatoes, vegetables in season, bread, pie, tea.
Supper. Bread, butter, cake, tea.

COST OF LIVING, \$686

Rent, \$120 00	Fish, \$7 90	Dry goods, \$14 00
Fuel, 46 55	Milk, 14 36	Papers, 11 60
Groceries, 304 16	Boots and shoes, 16 37	Sundries, 14 68
Meat, 94 48	Clothing, 42 00	

No. 377.

MECHANIC.

American.

EARNINGS of father, \$762

CONDITION.—Family numbers 4, parents and 2 children of six and twelve years of age; both go to school. Have a tenement of 5 rooms, well situated, in a very pleasant neighborhood, and with good surroundings. House is well furnished, and the parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Graham bread, hot biscuit, butter, eggs, cake and coffee.
Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, and tea.
Supper. Bread, butter, sauce or fruit, cake and tea.

COST OF LIVING, \$762

Rent, \$120 00	Milk, \$13 22	Societies, \$8 00
Fuel, 43 00	Boots and shoes, 24 00	Religion, 14 00
Groceries, 237 12	Clothing, 94 75	Sundries, 59 82
Meat, 101 09	Dry goods, 36 00	
Fish, 6 00	Papers, 6 00	

No. 378.

MECHANIC.

American.

EARNINGS of father, \$840

CONDITION.—Family numbers 6, parents and 4 children from three to twelve years of age; two go to school. Live in a tenement of 5 rooms, in a good neighborhood, with pleasant surroundings. House is well furnished. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat and the remains of dinner, coffee.
Dinner. Bread, butter, meat, potatoes, pie, tea.
Supper. Bread, butter, cheese or fish, gingerbread, tea.

COST OF LIVING, \$882 65

Rent, \$156 00	Fish, \$12 34	Dry goods, \$27 37
Fuel, 49 60	Milk, 21 18	Papers, 7 00
Groceries, 368 76	Boots and shoes, 30 00	Religion, 16 00
Meat, 104 90	Clothing, 69 60	Sundries, 20 00

No. 379.	MECHANIC.	English.
EARNINGS of father,		\$714
son, aged 15,		280
		<hr/> \$994

CONDITION.—Family numbers 5, parents and 3 children from seven to fifteen years of age; two go to school. Live in a tenement of 6 rooms, with the surroundings clean, pleasant and healthy. House is well furnished and the rooms carpeted. Have a sewing and other labor-saving machines. Family dresses well and is very comfortable.

FOOD.—*Breakfast.* Bread, butter, meat, potatoes, gingerbread and coffee.
Dinner. Meat, potatoes, vegetables, bread, pie and tea.
Supper. Bread, butter, cheese, cake and tea.

COST OF LIVING,				\$362 10	
Rent,	\$156 00	Milk,	\$38 28	Papers,	\$12 00
Fuel,	53 00	Boots and shoes,	30 00	Sundries,	33 50
Groceries,	398 76	Clothing,	94 00		
Meat,	110 14	Dry goods,	36 42		

No. 380.	MECHANIC.	English.
EARNINGS of father,		\$235

CONDITION.—Family numbers 4, parents and 2 children of three and six years of age; one goes to school. Live in a tenement of 4 rooms, with pleasant and healthy surroundings. House is well furnished and parlor carpeted. Own a piano. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, gingerbread, tea.
Dinner. Meat, potatoes, vegetables, bread, pie or pudding.
Supper. Bread, butter, sometimes fish, tea.

COST OF LIVING,				\$532 40	
Rent,	\$168 00	Fish,	\$6 00	Dry goods,	\$21 00
Fuel,	57 50	Milk,	27 80	Books and papers,	20 50
Groceries,	342 61	Boots and shoes,	26 30	Societies,	5 00
Meat,	98 44	Clothing,	41 95	Sundries,	14 80

No. 381.	MECHANIC.	Irish.
EARNINGS of father,		\$630
son, aged 14,		226
		<hr/> \$856

CONDITION.—Family numbers 6, parents and 4 children from three to fourteen years of age; two go to school. Live in a tenement of 6 rooms, in a pleasant neighborhood and with very good surroundings. The house is well furnished and parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, eggs or fish, gingerbread and coffee.
Dinner. Bread, butter, meat, potatoes, sometimes vegetables, pickles, pie, tea.
Supper. Bread, butter, cheese or cold meat, cake and tea. Have boiled dinner once per week.

COST OF LIVING,				\$323	
Rent,	\$132 00	Fish,	\$23 90	Dry goods,	\$33 50
Fuel,	52 20	Milk,	15 24	Papers,	4 00
Groceries,	338 02	Boots and shoes,	26 00	Religion,	12 00
Meat,	80 60	Clothing,	87 00	Sundries,	23 54

EARNINGS of father, \$500

CONDITION.—Family numbers 5; parents and 3 children from six to fourteen years of age; all go to school. Live in a tenement of 5 rooms, situated in a good locality, with pleasant surroundings. House is well furnished, with parlor carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Bread, butter, meat or eggs, cake, coffee.

Dinner. Bread, butter, meat, potatoes, vegetables, pickles, pie, tea.

Supper. Bread, butter, fish or sauce, gingerbread, tea.

COST OF LIVING, \$322 83

Rent, \$182 00	Milk, \$23 40	Societies, \$6 00
Fuel, 51 00	Boots and shoes, . . 27 00	Religion, 14 00
Groceries, . . . 357 89	Clothing, 51 00	Sundries, 22 80
Meat, 104 26	Dry goods, 19 50	
Fish, 6 68	Papers, 9 00	

No. 383.

STONE-CUTTER.

English.

EARNINGS of father, \$339

CONDITION.—Family numbers 4, parents and 2 children of eight and eleven years of age; both go to school. Occupy a tenement of 6 rooms, in a good neighborhood, with clean and healthy surroundings. The house is well furnished, and the parlor carpeted. Have a sewing and other labor-saving machines. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, eggs or meat, cake and tea.

Dinner. Bread, butter, meat, potatoes, vegetables, pudding or pie.

Supper. Bread, butter, cheese or fish, cake and tea.

COST OF LIVING, \$500 04

Rent, \$144 00	Milk, \$26 80	Papers, \$12 10
Fuel, 50 00	Boots and shoes, . . 24 50	Societies, 8 00
Groceries, . . . 350 26	Clothing, 43 00	Sundries, 13 40
Meat, 112 00	Dry goods, 16 48	

No. 384.

STONE-CUTTER.

Irish.

EARNINGS of father, \$323

CONDITION.—Family numbers 5, parents and 3 children from two to thirteen years of age; two go to school. Live in a tenement of 5 rooms, with good surroundings. House is well furnished, and the rooms carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, meat, and what was left from dinner, gingerbread.

Dinner. Meat or fish, potatoes, vegetables, bread, pie.

Supper. Bread, butter, cheese, gingerbread, tea.

COST OF LIVING, \$320

Rent, \$133 00	Fish, \$12 80	Dry goods, \$22 68
Fuel, 47 60	Milk, 16 24	Papers, 10 00
Groceries, . . . 331 92	Boots and shoes, . . 24 00	Sundries, 19 20
Meat, 97 56	Clothing, 46 00	

No. 386.

WHIP-MAKER.

American.

EARNINGS of father, \$765

CONDITION.—Family numbers 4, parents and 2 children of three and nine years of age; one goes to school. Own the house they live in (6 rooms), which is pleasantly situated, in a good locality, with neat and healthy surroundings. The rooms are well furnished and carpeted. Have a sewing-machine. Family dresses well and attends church.

FOOD.—*Breakfast.* Brown bread, hot biscuit, butter, eggs or fish, cake, pie, coffee.*Dinner.* Meat, potatoes, vegetables, pickles, cheese, cake, pie and tea.*Supper.* Bread, butter, crackers, sauce, cheese, cake and tea.

COST OF LIVING, \$673

Fuel,	\$47 50	Milk,	\$15 36	Books and papers, . .	\$9 00
Groceries,	263 40	Boots and shoes, . .	23 25	Religion,	16 00
Meat,	74 50	Clothing,	100 00	Sundries, including	
Fish,	17 60	Dry goods,	24 00	taxes,	51 80

No. 386.

WHIP-MAKER.

American.

EARNINGS of father, \$783

CONDITION.—Family numbers 4, parents and 2 children from two to twelve years of age; one goes to school. Occupy a tenement of 4 rooms, in a good and healthy neighborhood, with pleasant surroundings. House is well furnished, and parlor carpeted. Family dresses well and attends church.

FOOD.—*Breakfast.* White and graham bread, butter, meat or eggs, cake, tea.*Dinner.* Bread, butter, meat, potatoes, vegetables, pickles, pie or pudding, tea.*Supper.* Bread, butter, sauce, cheese or fish, pie, tea. Beans once a week.

COST OF LIVING, \$783

Rent,	\$144 00	Milk,	\$21 54	Books and papers, . .	\$5 00
Fuel,	39 75	Boots and shoes, . .	31 20	Religion,	12 00
Groceries,	276 99	Clothing,	65 00	Sundries,	33 64
Meat,	81 28	Dry goods,	18 00		
Fish,	9 60	Societies,	12 00		

No. 387.

WHIP-MAKER.

Irish.

EARNINGS of father, \$680

son, aged 16, 200

\$880

CONDITION.—Family numbers 6, parents and 4 children from three to fifteen years of age; two go to school. Have a tenement of 5 rooms, well situated, and with good surroundings. The rooms are well furnished and the parlor carpeted. Have a sewing-machine. Family dresses well, and is in good health.

FOOD.—*Breakfast.* Bread, butter, meat or fish, cake and coffee.*Dinner.* Bread, butter, meat, potatoes, sometimes vegetables, pie.*Supper.* Bread, butter, cheese, gingerbread, tea.

COST OF LIVING, \$680

Rent,	\$150 00	Fish,	\$14 30	Dry goods,	\$23 60
Fuel,	47 50	Milk,	28 90	Papers,	6 00
Groceries,	378 29	Boots and shoes, . .	31 30	Religion,	12 00
Meat,	102 70	Clothing,	60 00	Sundries,	26 71

No. 388.

LABORER, IN CARRIAGE-SHOP.

Irish.

EARNINGS of father, in shop,	\$310
in mill,	60
son, aged 12,	200
son, aged 9,	76
	<hr/> \$655

CONDITION.—Family numbers 7, parents and 5 children from one to twelve years of age, one of whom goes to school, but will work as soon as old enough. They live in a tenement of 5 rooms, which are scantily furnished, the floors bare, the surroundings dirty. There is a general air of poverty throughout, in striking contrast with other portions of the town. The children's clothing is ragged, their appearance untidy, and feet bare. The father has money in savings bank, and adds to it every month.

FOOD.—*Breakfast.* Bread, butter, potatoes, salt pork or fish, and coffee.

Dinner. Meat or fish, potatoes, cabbage and bread.

Supper. Bread, butter, sometimes gingerbread, and tea; the children have porridge. The meat this family use is principally from the cheapest pieces, either fresh or corned. From personal inspection, I can say that the quality of the food is the poorest I have ever seen eaten. What kind of living, or where the locality, is a matter of indifference, but the father is determined to save money if the family starve.

COST OF LIVING,				\$542 80
Rent,	\$72 00	Fish,	\$96 45	Dry goods, \$12 00
Fuel,	36 75	Milk,	8 60	Sundries, 28 00
Groceries,	272 90	Boots and shoes,	12 75	
Meat,	47 30	Clothing,	37 90	

No. 389.

LABORER, IN SHOP.

English.

EARNINGS of father,	\$420
daughter, aged 16,	291
	<hr/> \$711

CONDITION.—Family numbers 6, parents and 4 children from six to sixteen years of age; three go to school. Occupy a tenement of 4 rooms, with good surroundings. House is well furnished. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, sometimes meat, coffee.

Dinner. Meat, potatoes, bread, sometimes pie.

Supper. Bread, butter, cheese or fish and tea.

COST OF LIVING,						\$711
Rent,	\$120 00	Fish,	\$6 22	Dry goods, . . .	\$16 50	
Fuel,	44 75	Milk,	15 90	Papers,	8 00	
Groceries, . .	341 48	Boots and shoes, .	22 76	Sundries, . . .	12 21	
Meat,	83 18	Clothing, . . .	40 00			

No. 390.

LABORER, IN SHOP.

English.

EARNINGS of father,	\$448
son, aged 15,	220
	<hr/> \$668

CONDITION.—Family numbers 6, parents and 4 children from three to fifteen years of age; two go to school. Have a tenement of 5 rooms, well situated, and with good surroundings. House is moderately well furnished. Family dresses plainly.

FOOD.—*Breakfast.* Bread, butter, what was left from dinner, tea.

Dinner. Meat, potatoes, bread, sometimes pie.

Supper. Bread, butter, occasionally cheese, and tea.

COST OF LIVING,				\$668	
Rent,	\$84 00	Milk,	\$13 90	Paper,	\$6 00
Fuel,	42 00	Boots and shoes, .	21 00	Sundries, . . .	38 77
Groceries, . .	251 33	Clothing, . . .	30 00		
Meat,	69 00	Dry goods, . . .	12 00		

No. 391.	LABORER, IN SHOP.	German.
EARNINGS of father,		\$449
daughter, aged 17,		233
son, aged 14,		227
		<hr/> \$909

CONDITION.—Family numbers 6, parents and 4 children from four to seventeen years of age; one goes to school. Live in a tenement of 5 rooms, in a pleasant neighborhood, with good surroundings. House is well furnished, with parlor carpeted. Family dresses well.

FOOD.—*Breakfast.* Bread, butter, cold meat, gingerbread, tea.

Dinner. Bread, butter, meat, potatoes, sometimes vegetables, pickles, pie or pudding.

Supper. Bread, butter, cheese, tea.

COST OF LIVING,				\$909
Rent, \$168 00	Fish, \$7 44	Dry goods,		\$23 00
Fuel, 48 00	Milk, 21 72	Papers,		6 00
Groceries, . . . 401 13	Boots and shoes, . . 31 00	Societies,		8 00
Meat, 112 67	Clothing, 63 00	Sundries,		13 44

No. 392.	LABORER, IN SHOP.	Irish.
EARNINGS of father,		\$400
daughter, aged 16,		218
		<hr/> \$618

CONDITION.—Family numbers 6, parents and 4 children from four to fifteen years of age; two go to school. Have a tenement of 5 rooms, with good surroundings. House is moderately well furnished. Family dresses fairly.

FOOD.—*Breakfast.* Bread, butter, salt pork, potatoes, coffee.

Dinner. Meat, potatoes, salt pork, bread; cabbage once per week.

Supper. Bread, butter, tea.

COST OF LIVING,				\$618
Rent, \$100 00	Fish, \$10 00	Dry goods,		\$16 00
Fuel, 33 00	Milk, 19 80	Sundries,		20 44
Groceries, . . . 302 15	Boots and shoes, . . 17 50			
Meat, 62 11	Clothing, 38 00			

No. 393.	LABORER, IN SHOP.	Irish.
EARNINGS of father,		\$450

CONDITION.—Family numbers 5, parents and 3 children from one to five years of age; one goes to school. Live in a tenement of 3 rooms, with poor surroundings. House is miserably furnished and unpleasant. Family is ill-dressed.

FOOD.—*Breakfast.* Bread, butter, potatoes, coffee.

Dinner. Meat or fish, potatoes, bread.

Supper. Bread, butter, tea.

COST OF LIVING,				\$475
Rent, \$60 00	Fish, \$12 00	Dry goods,		\$20 00
Fuel, 28 00	Milk, 11 22	Sundries,		10 84
Groceries, . . . 252 73	Boots and shoes, . . 10 00			
Meat, 51 21	Clothing, 21 00			

No. 397.	LABORER, IN WHIP-FACTORY.	<i>Irish.</i>
EARNINGS of father,		\$510
son, aged 15,		300
		— \$810

CONDITION.—Family numbers 7, parents and 5 children from one to fifteen years of age; two go to school. Have a tenement of 5 rooms, situated in a good neighborhood, with good surroundings; everything is in good order with the exception of the yard, which is not kept very clean. House is moderately well furnished. Family dresses comfortably and attends church.

FOOD.—*Breakfast.* Bread, butter, fish or pork, potatoes and coffee.
Dinner. Bread, butter, meat, potatoes, cabbage, pie.
Supper. Bread, butter, cheese and tea.

COST OF LIVING,					\$810
Rent, \$144 00	Fish, \$18 25	Dry goods,		\$21 50	
Fuel, 51 75	Milk, 27 40	Religion,		10 00	
Groceries, 342 00	Boots and shoes, 23 80	Sundries,		23 80	
Meat, 97 60	Clothing, 40 90				

CHAPTER IV.

COST OF LIVING.

Cost of living, an often-used expression, means, in its broadest sense, the relation of earnings to expenses. A complete handling of such a subject, with this comprehension, requires, *first*, a full investigation into the sources of income, denoting the amount received from each; *second*, an analysis of the total expenditure, showing the outlay for each item of necessities or luxuries; *third*, a comparison between the two sides of the account, as given above, in order to show the pecuniary surplus or deficit; and, *fourth*, a further comparison, or examination, of a more abstract nature, to ascertain if the recipients of wages, as a return for labor, obtain enough to enable them to secure what it is "right and just" they should have.

In this chapter we consider earnings, the sources from which derived, and the amount furnished by each class of workers in the three hundred and ninety-seven families whose condition we examined. We here deal only with expenses in the aggregate, and, by comparing them with the earnings, deduce the actual surplus or debt. Chapters V. to IX. inclusive, are devoted to an analysis of expenditures, while, in Chap. X., to furnish what we deem necessary for a complete presentation of the subject, we consider, in an

abstract sense, the laborer and his wage, to ascertain if, being "worthy of his hire," he receives it.

There is an intimate connection between a man's earnings and his expenses. The former governs the latter inexorably, if the individual obeys the cardinal principle of keeping his expenses within the limit of his income. Wages, and the price of the necessities of life, may both rise, fall or remain stationary; if there is a sympathetic movement of the two in the same direction, the condition of the worker is not materially changed. If wages increase, and prices remain stationary or fall, the workman is a gainer, and the result may be increased consumption, the use of articles of a better quality, or a money saving. If wages remain stationary, and prices fall materially, there is a similar result.

But, on the other hand, if wages remain stationary or fall, and prices advance, then the result is decreased consumption, the use of articles of an inferior quality, or debt and its discomforts. The reciprocal action of earnings and expenses admits of many more postulates; but those we have given are sufficient for our purpose, which is to show that a table which states a family's daily, weekly or yearly consumption of the necessities of life, is of no practical use, in comparison, unless the daily, weekly or yearly earnings are also given.

It is apparent, also, that a table of wages without the prices of household necessities, or a table of prices without the relative wages, are both valueless for purposes of comparison, or as indices of the condition of the working-classes in the places considered.

By the necessities of life, are meant food, lodging, clothing, fuel, light, furniture and other housekeeping articles; tools, taxes, school-books, and the often unavoidable outlay in case of sickness. The difference between the sum required to meet this necessary outlay and the whole income of the workingman and his family, is the gross surplus of labor. Upon it he or they draw for the comforts or luxuries of life. It supplies him with the means for mental and bodily recreation, and for the purchase of those articles, which, while not of primary necessity for the life of the body, are yet absolutely necessary for the development of the mind, of a love of beauty in the home, and of a man's social possibilities.

After this second series of wants is partially supplied,—for the rich even rarely reach in practice the point of their aspirations for pleasure,—the remainder at his disposal is savings upon which to fall back in case of the “rainy day,” of prolonged sickness, loss of employment or old age.

If the yearly savings are kept up and the demands upon them are small, by such accumulation the additions derived from interest, or, it may be, by the results of profitable investments or speculation, in time the income of the aggregate amount may suffice to maintain the workingman, without toil on his part, and it is then that he may be said to have acquired a competence.

This competence is not a fixed sum, but is wholly governed by the requirements or manner of living of the individual. To one man, the interest of \$5,000 would secure the desired independence, if his manner of living was frugal, his family small, and the appetite for luxuries kept at a minimum. For another, twice this sum might be inadequate for his demands.

On the same basis of argument, that no one sum can indicate a proper competency for all, it is equally true that no one set of figures can indicate what should be a workingman's earnings and what his cost of living. Two workingmen, living side by side, may earn respectively \$800 and \$1,200 per year; the requirements of each may be fully met by the sums mentioned, and each may put by a tenth of his income as savings; a system of averaging which would give each \$1,000, would not satisfy both families, for the loss of one would become the gain of the other, and they would merely exchange financial status, and for the worse.

Thus we see that the *figure* is the creature of every circumstance, but the *fact* can not be so easily affected. The number in the family, the nature of the food, rise or fall in prices, geographical or business location, and many other particulars, have an influence in determining the exact *figure* of cost of living. The *fact* as to whether the father can support his family by his own earnings, whether his children have received or are receiving an education, whether his savings from year to year guarantee him a support in the future,—on these points minor details (as to the exact *figure*) lose their importance, and all evidence is cumulative one way or the other.

Having thus fully, and we trust explicitly, shown our conception of the value which resides in such facts as we hereafter present, we proceed to their exhibition, in tabular form, preceding each table with a textual explanation of its contents, and following it, almost universally, with such deductions as the facts given themselves warrant.

EARNINGS.

In every family, visited by our agents, the husband or father was engaged in some employment. In some cases, the father "alone" was able, by his earnings, to support his family; in others, he was "assisted" by the labor of his wife or children. The relative numbers of the "alone" or "assisted" are specifically shown in the following table:—

TABLE I.—*Heads of families "alone" or "assisted."*

PLACES, ETC.	Alone.	Assisted.
PLACES.		
Under 8,000 population,	45	75
From 8,000 to 16,000 population,	46	78
Above 16,000 population,	51	102
Totals,	142	255
NATIONALITIES.		
American,	92	93
English,	25	55
French,	1	1
French Canadian,	2	27
German,	6	20
Irish,	15	118
Scotch,	1	1
Totals,	142	255
OCCUPATIONS.		
Building trades, <i>sk.</i> , .	41	16
Boots, shoes and leather, <i>sk.</i> , .	15	24
Metal workers, <i>sk.</i> , .	44	17
“ “ <i>unsk.</i> , .	—	17
Mill operatives, <i>sk.</i> , .	4	31
“ “ <i>unsk.</i> , .	—	42
“ “ <i>overseers</i> , .	3	1
Outdoor employments, <i>unsk.</i> , .	16	92
Shop trades, <i>sk.</i> , .	18	6
“ “ <i>unsk.</i> , .	1	9
Totals,	142	255

TABLE I.—*Concluded.*

KIND OF LABOR,								Alone.	Assisted.
KIND OF LABOR.									
Skilled,	.	.	.	.	.	.	.	122	94
Unskilled,	.	.	.	.	.	.	.	17	160
Overseers,	.	.	.	.	.	.	.	8	1
Totals,	.	.	.	.	.	.	.	142	255

From this it is seen that but 35+ per cent of the heads of families are able, by their individual earnings, to supply their families' needs, while 64+ per cent rely upon the assistance of wives and children. In the larger places the percentage of assisted is the greatest. The nationality figures show that the American fathers are, considering their large number, the most successful in providing by their own labor for their families, while the Irish indicate the greatest inability. The unskilled metal workers and mill operatives are *in every case* assisted, while those engaged in outdoor employments make nearly as bad a showing. Of the skilled workmen, 56 per cent get along "alone"; of the unskilled, but 9 per cent; of the salaried overseers, 75 per cent.

The presentation of the sources of income, and the amount received from each, we make next, with separate tables for fathers, wives and children; in the case of the latter, some special tables are also given. The annual earnings of the heads of families are considered first.

TABLE II.—*Father's average yearly earnings.*

CLASSIFICATIONS.	Number of Families.	Persons to each Family.	Father's average yearly Earnings.
PLACES.			
Under 8,000 population,	120	5.11	\$561 91
From 8,000 to 16,000 population, . .	124	5.06	551 23
Above 16,000 population,	153	5.23	604 24
Totals,	397	5.14	\$574 89

TABLE II.—*Concluded.*

CLASSIFICATIONS.	Number of Families.	Persons to each Family.	Father's average yearly Earnings.
NATIONALITIES.			
American,	125	4.33	\$720 50
English,	80	4.99	605 28
French,	2	7.00	468 00
French Canadian,	29	5.59	430 84
German,	26	5.50	498 96
Irish,	133	5.80	464 37
Scotch,	2	5.00	790 00
Totals,	397	5.14	\$574 89
OCCUPATIONS.			
Building trades, <i>sk.</i> , .	57	4.46	\$723 86
Boots, shoes and leather, <i>sk.</i> , .	39	4.77	560 51
Metal workers, <i>sk.</i> , .	61	4.54	745 11
" " " " " " <i>unsk.</i> , .	17	5.59	458 53
Mill operatives, <i>sk.</i> , .	35	4.97	568 30
" " " " " " <i>unsk.</i> , .	42	5.88	392 05
" " " " " " <i>overseers</i> , .	4	5.25	985 00
Outdoor employments, <i>unsk.</i> , .	108	5.66	446 71
Shop trades, <i>sk.</i> , .	24	4.88	794 85
" " " " " " <i>unsk.</i> , .	10	5.90	424 60
Totals,	397	5.14	\$574 89
KIND OF LABOR.			
Skilled,	216	4.67	\$683 05
Unskilled,	177	5.72	433 62
Overseers,	4	5.25	985 00
Totals,	397	5.14	\$574 89

In the above table the average number of persons to each family is given, and the number of families in each subdivision, upon which a special average is based. The figures indicate that workmen in large cities earn the most money, but this fact is valueless until the sum is compared with its related cost of living. For this reason, we defer a more extended notice of the facts in this table until farther on in the chapter.

The wives at work, furnishing adult assistance, are shown in the succeeding table:—

TABLE III.—*Wives at work, and their earnings.*

Number of wives at work.	OCCUPATION OF HUSBAND.	Nationality of husband.	Wife's earnings.	Husband's earnings.	Children's earnings.	Size of Family.
						Ad. Ch.
1	Building trades, . sk.,	Am.,	\$90 00	\$660 00	—	2 1
1	Boot, shoe & leather, sk.,	"	100 00	531 00	—	2 1
1	" " " sk.,	"	380 00	570 00	—	2
1	Mill operatives, . sk.,	Eng.,	109 00	506 00	\$122 40	2 3
1	" " . sk.,	"	391 00	543 00	—	2 2
1	" " . sk.,	"	192 00	584 60	—	2 1
1	" " . sk.,	"	300 00	657 00	—	2
1	" " . sk.,	Ger.,	383 00	449 00	—	2 1
1	" " . sk.,	Irish,	300 00	540 00	—	2
1	Outdoor empl'm't, unsk.,	"	120 00	308 00	—	2 3
1	" " unsk.,	"	200 00	436 00	—	2 4
1	" " unsk.,	"	110 00	221 00	—	2 3
12	Totals,		\$2,675 00	\$6,005 60	\$122 40	—

This table has many points of information and interest. In 397 families, but twelve wives are employed otherwise than in their domestic duties, and of these but nine have children to look after; four of them have each but one child, one has two, two have three each, and one has a family of four. The nationality statement develops no relative significance. Six of the twelve are wives of mill operatives, and are representative of such labor in 77 families, containing 421 persons.

Mr. Mundella, M. P., in a speech made before the House of Commons, in June, 1873, when introducing his bill for the shortening of the hours of labor in factories, said 184,000 mothers, in England, were away from home at work in the mills. However much we may congratulate ourselves that wife-labor is not such a comparatively appalling evil in our own factories as in those of England, yet the fact remains that all such employment is baneful in its effects, and a false economy in the end. A workman may make himself partially independent in two ways,—by receiving good wages, or by having a small expenditure. If he adopts, or is forced to embrace, the latter plan, he can have no abler coadjutor than

a wife "at home," if she is properly inclined and instructed. In personal care of her children, as compared with hired service; in the making and repairing of their clothing as against an outlay for those purposes, or the purchase of ready-made articles; in the instruction of her daughters in domestic matters to render them helpmeets in the future to their husbands; in the preparation of good food, and such utilization of that purchased as "to waste not and want not";—in all these particulars, and especially in her ability to make home attractive, lies the power of the mother at home; and for her own physical good, and the manifold good of her family, she should be aided in exercising that power to the utmost.

The children's earnings form the next phase of "assisted" support, and we present their averages in such a way as to show in which place, nationality, occupation and kind of labor their toil is most productive of money return, and, with the same degree of specification, indicate the extent to which parents rely, or are forced to depend, upon the proceeds of child labor.

TABLE IV.—*Children's Average Earnings.*

CLASSIFICATION.	Number of Families.	Number of Children at work.	Children's average earnings.
PLACES.			
Under 8,000 population,	120	98	\$208 76
From 8,000 to 16,000 population,	124	104	217 27
Above 16,000 population,	153	123	234 48
Totals,	397	325	\$221 22
NATIONALITIES.			
American,	125	35	\$278 26
English,	80	65	247 68
French,	2	3	212 00
French Canadian,	29	39	197 67
German,	26	29	229 24
Irish,	133	153	201 46
Scotch,	2	1	240 00
Totals,	397	325	\$221 22

TABLE IV.—*Concluded.*

CLASSIFICATION.	Number of Families.	Number of Children at work.	Children's average earnings.
OCCUPATIONS.			
Building trades, <i>sk.</i> , .	57	17	\$298 00
Boots, shoes and leather, <i>sk.</i> , .	39	31	230 90
Metal workers, <i>sk.</i> , .	61	20	287 85
" " <i>unsk.</i> , .	17	19	227 47
Mill operatives, <i>sk.</i> , .	35	29	241 29
" " <i>unsk.</i> , .	42	63	190 58
" " <i>overseers</i> , .	4	2	410 00
Outdoor employments, <i>sk.</i> , .	108	127	203 03
Shop trades, <i>sk.</i> , .	24	6	278 33
" " <i>unsk.</i> , .	10	11	210 27
Totals,	397	325	\$221 22
KIND OF LABOR.			
Skilled,	216	103	\$258 72
Unskilled,	177	220	201 94
Overseers,	4	2	410 00
Totals,	397	325	\$221 22

According to our grouping of places, there is an average of less than one child to the family employed. The nationality presentation changes this aspect, and shows an average of more than one child employed to the family, as regards the French Canadians, Germans and Irish. In the case of metal workers, mill operatives, outdoor employments and shop trades (all *unskilled*), the same state of affairs exists, and the extent of child labor in unskilled employments, as a class, is still more plainly seen by a reference to that part of the table which is headed, "Kind of Labor."

The ages of the children at work, their sex and relative earnings, are next given in detail.

TABLE V.—*Ages, Sex and Earnings of Children.*

AGES OF CHILDREN AT WORK.	Number at Work. All ages.	Number of Boys.	Total Earnings of Boys.	Number of Girls.	Total Earnings of Girls.
Under 10,	1	1	\$76 00	—	—
Aged 10,	4	4	608 00	—	—
11,	7	6	777 00	1	\$110 00
12,	35	33	4,813 00	2	334 75
13,	53	48	7,563 40	5	801 00
14,	77	69	13,853 00	8	1,687 00
15,	54	41	10,059 00	13	2,805 00
16,	59	26	7,788 00	33	9,376 00
17,	31	10	3,386 00	21	6,168 00
18,	2	1	416 00	1	397 00
19,	2	1	520 00	1	357 00
Totals,	325	240	\$49,859 40	85	\$22,035 75

A gratifying feature of the above exhibit is the fact that but one child under ten years of age was at work. The boys at the age of fourteen have the greatest numerical strength, and contribute in the most material degree to the family support. The girls at the age of sixteen occupy a similar relative position to the number employed and amount earned. The ages of twelve for boys and of fifteen for girls seem to be the ones at which they are, respectively, forced into the field of labor in comparatively large numbers. The ages at which they receive the most pay, and the averages for each sex, will be discerned by an examination of Table VI.

TABLE VI.—*Ages and Sex of Working Children and their respective Average Earnings.*

AGES OF CHILDREN AT WORK.	Number at Work. All ages.	Number of Boys.	Average Earnings of Boys.	Number of Girls.	Average Earnings of Girls.
Under 10,	1	1	\$76 00	—	—
Aged 10,	4	4	152 00	—	—
11,	7	6	129 50	1	\$110 00
12,	35	33	145 85	2	167 37
13,	53	48	157 56	5	160 00
14,	77	69	200 77	8	210 88
15,	54	41	245 34	13	215 77
16,	59	26	299 54	33	284 12
17,	31	10	338 60	21	265 14
18,	2	1	416 00	1	397 00
19,	2	1	520 00	1	357 00
Totals,	325	240	\$207 75	85	\$259 24

The influence of age and sex is plainly seen in the above illustration of average earnings, demonstrating that the boy of seventeen and the girl of eighteen receive the greatest pay. With an exception in the case of the boys aged ten, whose comparatively large earnings destroy an otherwise perfect progression, the fact is patent that the pay for boys increases as the age advances. The earnings of girls do not seem to be governed by their age to such a marked degree. It will be noticed that the average earnings of girls are quite largely in excess of those received by the stronger sex.

The above table completes our enumeration of "assisted" labor. We are aware that many of those employed, whom we call "children," in factory parlance, would be designated as "young persons." Allowing this, without remark or argument as to when child-life should end and the battle of life begin, we anticipate no objection to our considering those under fifteen years of age as being "children," and, as such, to be found at school or play, rather than in the ranks of labor. Tables VII. and VIII. have been inserted to indicate how labor and the shop capture prisoners from play and the school, and also to show how much the labor of the *working child* reduces the rightful remuneration of the *workingman*.

TABLE VII.—*Occupations and Kind of Labor of Fathers having Children under 15 Years of Age at Work.*

CLASSIFICATION.	No. of Children under 15 yrs. of age at work.	Children's proportion of Earnings.	Number of Boys.	Wages of Boys.	Number of Girls.	Wages of Girls.
OCCUPATIONS.						
Building trades, . . . <i>sk.</i> , .	2	.01+	2	\$478 00	—	—
Boots, shoes & leather, <i>sk.</i> , .	18	.12+	16	3,299 00	2	\$312 00
Metal workers, . . . <i>unsk.</i> , .	10	.16+	10	1,945 00	—	—
Mill operatives, . . . <i>sk.</i> , .	15	.09+	14	2,504 40	1	150 00
“ “ . . . <i>unsk.</i> , .	45	.21+	38	5,685 00	7	1,400 75
Outdoor employments, <i>unsk.</i> , .	81	.18+	75	12,614 00	6	1,070 00
Shop trades, . . . <i>sk.</i> , .	1	.01+	1	226 00	—	—
“ “ . . . <i>unsk.</i> , .	5	.14+	5	939 00	—	—
Totals,	177	.12+	161	\$27,690 40	16	\$2,932 75
KIND OF LABOR.						
Skilled,	36	.05+	33	\$6,507 40	3	\$462 00
Unskilled,	141	.19+	128	21,183 00	13	2,470 75
Totals,	177	.12+	161	\$27,690 40	16	\$2,932 75

As stated in the introduction to this part, we deem the information presented above of the most vital nature, as it furnishes a solid basis of fact upon which to found legislation, in accordance with the terms of the “plan” presented in Part I. In building and shop trades, the child worker furnishes but an inconsiderable part of the combined earnings, and for that reason it would be all gain if they were in school. The absence of skilled metal workers from this list is a credit to the craft. The skilled boot, shoe and leather workmen, unskilled metal workers, mill operatives (especially the unskilled) and unskilled outdoor employments and shop trades derive a large percentage of their families’ support from child-labor, which class of workers, as a whole, supply 12 + per cent of the total earnings of 397 families. This percentage, according to kind of labor, is divided most unequally; the skilled workman getting but 5 + per cent, while the unskilled laborer obtains 19 + per cent from his children’s labor. Our ideas and opinions as regards child workers are so fully and decidedly expressed in Part I., that we shall here

drop further discussion of the subject, closing it with the appended tables, VIII. and IX.

TABLE VIII.—*Nationalities of Fathers having Children under 15 Years of Age at Work.*

CLASSIFICATION.	Number under 15 years of age at work.	Children's proportion of Earnings.	Number of Boys.	Wages of Boys.	Number of Girls.	Wages of Girls.
American,	12	.02+	11	\$2,277 00	1	\$184 75
English,	23	.06+	19	3,575 40	4	652 00
French,	2	.20	1	212 00	1	116 00
French Canadian,	25	.19	22	3,255 00	3	633 00
German,	12	.10	12	2,036 00	—	—
Irish,	103	.18+	96	16,335 00	7	1,347 00
Totals,	177	.12+	161	\$27,690 40	16	\$2,932 75

It will be seen that American and English fathers depend but to a small extent upon the labor of children; the other nationalities, on the contrary, make a most unpleasant exhibit.

TABLE IX.—*Children at Home, at School and at Work.*

CLASSIFICATION.	No. of Families.	No. of Children.	At Home.	At School.	At Work.
NATIONALITIES.					
American,	125	291	87	169	35
English,	80	239	60	114	65
French,	2	10	5	2	3
French Canadian,	29	104	30	35	39
German,	26	91	28	34	29
Irish,	133	505	161	191	153
Scotch,	2	6	1	4	1
Totals,	397	1,246	372	549	325

TABLE IX.—*Concluded.*

CLASSIFICATION.		No. of Families.	No. of Children.	At Home.	At School.	At Work.
OCCUPATIONS.						
Building trades,	sk., .	57	140	46	77	17
Boots, shoes and leather,	sk., .	89	108	23	54	31
Metal workers,	sk., .	61	155	50	85	20
" " " " " " " " " "	unsk.,	17	61	21	21	19
Mill operatives,	sk., .	35	104	28	47	29
" " " " " " " " " "	unsk.,	42	163	46	54	63
" " " " " " " " " "	overseers,	4	12	1	9	2
Outdoor employments,	unsk.,	108	395	124	144	127
Shop trades,	sk., .	24	69	22	41	6
" " " " " " " " " "	unsk.,	10	39	11	17	11
Totals,		397	1,246	372	549	325
KIND OF LABOR.						
Skilled,		216	577	170	304	103
Unskilled,		177	657	201	236	220
Overseers,		4	12	1	9	2
Totals,		397	1,246	372	549	325

Of the 1,246 children, of all ages, in the 397 families visited, as indicated by the above table, 26 per cent were at work, 44 per cent at school, and 29 per cent at home. The particular ages of those at school and at work not having been obtained by our agents, any comparison with the published statistics of school attendance would be valueless; but the careful examiner, by figuring percentages, will find much new and useful information in the table, as regards the children of fathers of different nationalities, and of those engaged in the various occupations or kinds of labor.

Having shown the sources of income, and the amounts derived from each,—viz., the earnings of the father and the "assisting" earnings of wives and children,—we next consider the combined earnings (from all sources), by presenting a tabular form, with full specifications, which, when compared item for item with Table II. of this part, will show the additions made by "assisted" earnings. As in the previously mentioned table, the earnings in large cities remain in the ascendancy;

but, as before stated, earnings have no significance until compared with expenses,—which comparison is necessarily deferred until after the cost of living presentation.

TABLE X.—*Yearly Average of Combined Earnings.*

CLASSIFICATION.	Size of Family.	No. of Families.	Fathers at work.	Wives at Work.	Children at work.	Average combined yearly Earnings.
PLACES.						
Under 8,000 population, . . .	5.11	120	120	2	98	\$735 72
From 8,000 to 16,000 population, . . .	5.06	124	124	3	104	738 95
Above 16,000 population, . . .	5.23	153	153	7	123	803 16
Totals,	5.14	397	397	12	325	\$762 72
NATIONALITIES.						
American,	4.93	125	125	3	35	\$802 98
English,	4.99	80	80	4	65	818 92
French,	7.00	2	2	—	3	786 00
French Canadian,	5.59	29	29	—	39	696 66
German,	5.50	26	26	1	29	769 38
Irish,	5.80	133	133	4	153	701 62
Scotch,	5.00	2	2	—	1	910 00
Totals,	5.14	397	397	12	325	\$762 72
OCCUPATIONS.						
Building trades, <i>sk.</i> , . .	4.46	57	57	1	17	\$814 32
Boots, shoes and leather, <i>sk.</i> , . .	4.77	39	39	2	31	756 36
Metal workers, <i>sk.</i> , . .	4.54	61	61	—	20	839 49
“ “ “ “ “ <i>unsk.</i> ,	5.59	17	17	—	19	712 76
Mill operatives, <i>sk.</i> , . .	4.97	35	35	6	29	816 09
“ “ “ “ “ <i>unsk.</i> ,	5.88	42	42	—	63	677 92
“ “ “ “ “ <i>overseers</i> ,	5 25	4	4	—	2	1,190 00
Outdoor employments, <i>unsk.</i> ,	5.66	108	108	3	127	689 44
Shop trades, <i>sk.</i> , . .	4.88	24	24	—	6	864 44
“ “ “ “ “ <i>unsk.</i> ,	5.90	10	10	—	11	655 90
Totals,	5.14	397	397	12	325	\$762 72
KIND OF LABOR.						
Skilled,	4.67	216	216	9	103	\$816 81
Unskilled,	5.72	177	177	3	220	687 05
Overseers,	5.25	4	4	—	2	1,190 00
Totals,	5.14	397	397	12	325	\$762 72

A marked point of interest, as developed in the above table, is the showing of the number of workers in the 397 families.

The head of each family, 12 wives and 325 children, make a body of 734 workers, in a total of 2,041 persons, equivalent to 36 per cent. Of these 734 workers, the fathers form 54 per cent, the wives 1+ per cent, and the children the balance, or 44+ per cent.

What more forcible proof than the above statement is needed to show that child labor is a violation of the organic law of production? *forty-four* per cent of the bodies producing (see next table) but *twenty-four* per cent of the income!

If it should be said by some, that by taking the families of mill operatives, outdoor laborers, etc., we have presented a class of people among whom the percentage of laborers is greater than the average, the following statement will show the want of fact upon which such an opinion is founded. The families investigated, as stated above, contained 2,041 persons, of whom 734, or 36 per cent, were workers. By the United States census of 1870, there were reported, in Massachusetts, 579,844 workers in a population of 1,457,351, which is a percentage of 39+, showing that, in reality, the families examined had 3+ per cent less workers than the state in general.

For a more perfect and explicit exposition of the sources of income, and the amount supplied by each, we present Table XI. In it, instead of averages, we give percentages, which are more easily grasped by the mind and remembered. In addition to the usual specifications of place, nationality, occupation and kind of labor, we here introduce a new subdivision, based upon the size of family.

TABLE XI.—*Sources of Income and Percentage supplied by Each.*

CLASSIFICATION.	No. of Families.	Fathers' proportion.	Wives' proportion.	Children's proportion.	Total "assisted" proportion.	Children's (under 16) proportion.
PLACES.						
Under 8,000 population, . . .	120	.76+	.004+	.23	.234+	—
From 8,000 to 16,000 population, . . .	124	.75	.007+	.24	.247+	—
Above 16,000 population, . . .	153	.75	.012+	.23	.242+	—
Totals,	397	.75+	.008+	.24	.248+	—

TABLE XI.—*Concluded.*

CLASSIFICATION.	No. of Families.	Fathers' proportion.	Wives' proportion.	Children's proportion.	Total "assisted" proportion.	Children's (under 16) proportion.
NATIONALITIES.						
American,	125	.89+	.005+	.097+	.10+	.02+
English,	80	.74+	.015+	.24	.25	.06
French,	2	.59+	-	.40	.40	.20
French Canadian,	29	.61+	-	.38	.38	.19
German,	26	.64+	.02	.33	.35	.10
Irish,	133	.66+	.008+	.33	.34	.18+
Scotch,	2	.86+	-	.13	.13	-
Totals,	397	.75+	.008+	.24	.248+	.12+
OCCUPATIONS.						
Building trades, <i>sk.</i> , .	57	.89+	.001+	.10	.101+	.01+
Boots, shoes and leather, <i>sk.</i> , .	39	.74+	.016+	.24	.256	.12+
Metal workers, <i>sk.</i> , .	61	.88	-	.11	.11	-
" " " " " <i>unsk.</i> , .	17	.64	-	.35	.35	.16+
Mill operatives, <i>sk.</i> , .	35	.70	.05+	.24	.29	.09
" " " " " <i>unsk.</i> , .	42	.57+	-	.42	.42	.24
" " " " " <i>overseers</i> , .	4	.82	-	.17	.17	-
Outdoor employments, <i>unsk.</i> , .	108	.65	.005+	.34	.345	.18+
Shop trades, <i>sk.</i> , .	24	.91+	-	.08	.08	.01+
" " " " " <i>unsk.</i> , .	10	.64+	-	.35	.35	.14+
Totals,	397	.75+	.008+	.24	.248+	.12+
KIND OF LABOR.						
Skilled,	216	.83+	.012+	.15	.162+	.05+
Unskilled,	177	.63+	.003+	.36	.363	.19+
Overseers,	4	.82+	-	.17	.17	-
Totals,	397	.75+	.008+	.24	.248+	.12+
SIZE OF FAMILY.						
2 adults,	4	.71+	.28	-	.28	-
2 adults, 1 child,	27	.96	.03	-	.03	-
2 adults, 2 children,	92	.96	.005	.03	.035	-
2 adults, 3 children,	121	.76	.003	.23	.233	-
2 adults, 4 children,	102	.64+	.002+	.35	.352	-
2 adults, 5 children,	42	.57+	-	.42	.42	-
2 adults, 6 children,	9	.49+	-	.50	.50	-
Totals,	397	.75+	.008+	.24	.248+	-

The money value of child labor, as compared with that of adults, is strikingly shown by the above. In places, the fathers' percentage varies but little, being, if anything, a trifle larger in the smaller towns. The wives' proportion

rarely exceeds one per cent. The children, of all ages, furnish, uniformly, about *one-quarter* of the entire earnings of all the families. Next, considering nationalities, we find four deriving from *thirty to forty* per cent of their total earnings from child labor. In the occupations, the unskilled metal workers and mill operatives transcend even this enormous proportion. Judged by kind of labor, the unskilled manifest their marked need of, or reliance upon, their children's assistance. Examining the size of family presentation, we find that, in the families without children, the wife contributes 28+ per cent of the earnings. The first child keeps the mother at home, and the percentage falls to 3+. With two children, one of them furnishes 3+, and thereafter their percentage steadily and regularly advances, until, with six children, *one-half* of the earnings comes from their labor. It would seem from this, seriously speaking, that, if the number of children was doubled, there would be no need of adult labor at all.

The "total assisted per cent" is found by uniting the respective percentages of the wives and children, and its meaning requires no special elucidation.

Great as the children's percentage of earnings is, from the above presentation, it must be remembered that it was derived by a comparison of their earnings with the entire earnings of all the families, whether the father supported them alone or was assisted. If we take the earnings of the 255 "assisted" families, and institute a comparison, we find that the children in them furnish *nearly 36 per cent* of such earnings, and of this the children under 15 years of age contribute 15+ per cent. By the same manner of computation, the wives supply .0133+ per cent of the "assisted" earnings. From the combination of these two we obtain *sixteen and one-third* per cent as a result of the labor in "assisted" families *of wives and of children under 15 years of age*. In order that these wives may remain at home, and these children attend school, this sixteen and one-third per cent must be, in some way, supplied. How this can be done is the great question, and the one with which future legislation must cope.

EXPENSES.

We now pass to the presentation and consideration of expenses in the aggregate. We retain the usual complete manner of exhibition; state the number of families upon which each average is founded; and, as an important adjunct, give the average size of family, coupled with its related cost of living. In our opinion, the facts could not be more plainly or fully expressed. The comparison of the two sides of the workingman's account,—viz., his earnings with his cost of living,—is performed in Table XIV., which renders, at this juncture, a special consideration of Table XII. unnecessary.

TABLE XII.—Yearly Average Cost of Living.

CLASSIFICATION.	Number of Families.	Size of Family.	Average yearly Cost of Living.
PLACES.			
Under 8,000 population,	120	5.11	\$718 08
From 8,000 to 16,000 population,	124	5.06	717 05
Above 16,000 population,	153	5.23	770 61
Totals,	397	5.14	\$738 00
NATIONALITIES.			
American,	125	4.33	\$770 02
English,	80	4.99	789 48
French,	2	7.	768 60
French Canadian,	29	5.59	686 06
German,	26	5.50	752 85
Irish,	133	5.80	594 16
Scotch,	2	5.	831 01
Totals,	397	5.14	\$738 00
OCCUPATIONS.			
Building trades, <i>sk.</i> , .	57	4.46	\$785 62
Boots, shoes and leather, <i>sk.</i> , .	39	4.77	736 93
Metal workers, <i>sk.</i> , .	61	4.54	803 00
“ “ <i>unsk.</i> , .	17	5.59	697 46
Mill operatives, <i>sk.</i> , .	35	4.97	770 35
“ “ <i>unsk.</i> , .	42	5.88	665 94
“ “ <i>overseers</i> , .	4	5.25	1,027 53
Outdoor employments, <i>unsk.</i> , .	108	5.66	677 22
Shop trades, <i>sk.</i> , .	24	4.88	833 90
“ “ <i>unsk.</i> , .	10	5.90	643 06
Totals,	397	5.14	\$738 00
KIND OF LABOR.			
Skilled,	216	4.67	\$784 63
Unskilled,	177	5.72	674 56
Overseers,	4	5.25	1,027 52
Totals,	397	5.14	\$738 00

It may be remarked here that a comparison, item for item, between the facts given in the preceding table and those in Tables II. and X. (Fathers' Earnings and Combined Earnings), will be most informing and suggestive.

Although somewhat in advance of the regular progression in the consideration of our subject, we insert here a table (XIII.) expressing earnings and expenses as based on size of family, prepared originally with the intention of showing, as stated in the introduction to this part, the extra expense caused by the addition of each child to the family. We could easily have arrived at such a figure, were it not for the existence of child labor, which adds to the earnings more than the support of the child adds to the expenses. Although the table fails to satisfactorily supply the information we desired to convey, it possesses sufficient value in its cost of living presentation, based on the family's size, to warrant its appearance here. A reference to, and comparison with, the last part of Table XI., showing percentage of earnings supplied from various sources, as regards different sized families, will confirm our estimate of the table's worth.

TABLE XIII.—*Earnings and Expense Averages based on Size of Family.*

SIZE OF FAMILY.	No. of Families.	No. of Children at Work.	Average Yearly Earnings.	Average Yearly Expenses.	Food, Yearly Average.	Dry Goods, Boots and Shoes, Clothing, Yearly Average.
2 adults,	4	—	\$871 75	\$666 88	\$481 00	\$73 74
2 adults, 1 child, . . .	27	—	711 16	686 26	348 87	99 89
2 adults, 2 children, . .	92	13	738 39	710 82	380 37	105 94
2 adults, 3 children, . .	121	96	713 93	699 07	407 37	95 14
2 adults, 4 children, . .	102	129	781 17	766 00	461 22	103 33
2 adults, 5 children, . .	42	67	858 74	822 70	479 93	121 43
2 adults, 6 children, . .	9	20	1,116 33	1,013 66	556 86	168 19
Totals,	397	325	\$762 72	\$738 00	\$422 16	\$104 29

Having exemplified the earnings, and the sources from which derived, together with cost of living in the aggregate, we are now prepared to compare the two sides of the

account, and deduce both facts and figures concerning the surplus of labor, or its opposite, debt.

SURPLUS OR DEBT.

The object of Table XIV. is to show, with regard to places, nationalities, occupations and kind of labor, the number of families in which the fathers' individual earnings are less than, equal to or more than the cost of living, and also to indicate the respective number of instances in which the family or combined earnings are less than, equal to or more than the necessary outlay for living expenses. As has been previously explained, "alone" denotes such families as are supported by the fathers' individual earnings, and "assisted" those in which the wives, children, or both, contribute.

TABLE XIV.—*Relation of Fathers' or Combined Earnings to Expenses.*

CLASSIFICATION.	"Alone" or "Assisted."	Earnings less than Expenses.	Earnings equal to Expenses.	Earnings more than Expenses.	Totals.
PLACES.					
Under 8,000 population, . . .	{ Alone, .	2	20	23	45
	{ Assisted, .	6	31	38	75
From 8,000 to 16,000 population, . .	{ Alone, .	5	16	25	46
	{ Assisted, .	8	27	43	78
Above 16,000 population, . . .	{ Alone, .	4	18	29	51
	{ Assisted, .	9	29	64	102
Totals,	{ Alone, .	11	54	77	142
	{ Assisted, .	23	87	145	255
NATIONALITIES.					
American,	{ Alone, .	5	34	53	92
	{ Assisted, .	—	9	24	33
English,	{ Alone, .	1	9	15	25
	{ Assisted, .	3	17	35	55
French,	{ Alone, .	1	—	—	1
	{ Assisted, .	—	—	1	1
French Canadian,	{ Alone, .	1	—	1	2
	{ Assisted, .	3	13	11	27
German,	{ Alone, .	—	2	2	4
	{ Assisted, .	—	7	15	22
Irish,	{ Alone, .	3	9	5	17
	{ Assisted, .	17	41	58	116
Scotch,	{ Alone, .	—	—	1	1
	{ Assisted, .	—	—	1	1
Totals,	{ Alone, .	11	54	77	142
	{ Assisted, .	23	87	145	255

TABLE XIV.—*Concluded.*

CLASSIFICATION.			"Alone" or "Assisted."	Earnings less than Expenses.	Earnings equal to Expenses.	Earnings more than Expenses.	Totals.
OCCUPATIONS.							
Building trades, . . .	sk., .	{	Alone, .	—	19	22	41
			Assisted, .	—	3	13	16
Boots, shoes and leather, . . .	sk., .	{	Alone, .	5	7	3	15
			Assisted, .	1	6	17	24
Metal workers, . . .	sk., .	{	Alone, .	—	16	28	44
			Assisted, .	—	2	15	17
Metal workers, . . .	unsk., .	{	Alone, .	—	—	—	—
			Assisted, .	1	7	9	17
Mill operatives, . . .	sk., .	{	Alone, .	1	1	2	4
			Assisted, .	—	7	24	31
Mill operatives, . . .	unsk., .	{	Alone, .	—	—	—	—
			Assisted, .	7	18	17	42
Mill operatives, . . .	overseers, .	{	Alone, .	—	—	3	3
			Assisted, .	—	—	1	1
Outdoor employments, . . .	unsk., .	{	Alone, .	3	7	6	16
			Assisted, .	14	36	42	92
Shop trades, . . .	sk., .	{	Alone, .	1	4	13	18
			Assisted, .	—	2	4	6
Shop trades, . . .	unsk., .	{	Alone, .	1	—	—	1
			Assisted, .	—	6	3	9
Totals, . . .		{	Alone, .	11	54	77	142
			Assisted, .	23	87	145	255
KIND OF LABOR.							
Skilled, . . .		{	Alone, .	7	47	68	122
			Assisted, .	1	20	73	94
Unskilled, . . .		{	Alone, .	4	7	6	17
			Assisted, .	22	67	71	160
Overseers, . . .		{	Alone, .	—	—	3	3
			Assisted, .	—	—	1	1
Totals, . . .		{	Alone, .	11	54	77	142
			Assisted, .	23	87	145	255

The above furnishes a most explicit summary of the financial status of Massachusetts workingmen, and the facts are made apparent, that out of 397 heads of families 34 are in debt, 141 contrive to make both ends meet, while 222, or 55+ per cent of the whole save money. The "assisted" families, and those in large places, show the greatest number of money savers, the proportions being, respectively, 145 out of 255, and 93 out of 153. As regards nationality, 77

American families out of 125 save money; 50 English out of 80; 17 German out of 26; 63 Irish out of 133; and both of the Scotch.

In the occupation list, we find the building trades have 35 money savers out of 57; the boot, shoe and leather workers, 20 out of 39; the skilled mill operatives, 26 out of 35; the unskilled outdoor employments, 48 in 108. Considering kind of labor, we ascertain that 141 skilled workmen out of 216 save money; of the unskilled, 77 in 177. The above statements will illustrate the manner of reading the table, which demonstrates that some workingmen in the state can and do save money, whatever their place of residence, nationality, occupation or kind of labor.

This *fact* being established, it remains next to show the actual amount saved, and the figures denoting it are given in the succeeding table in such a way as to admit of complete comparison between them and those in Table XIV. In addition, we give a savings statement based upon the size of family.

TABLE XV.—*Average Yearly Surplus or Savings.*

CLASSIFICATION.	No. of Families.	Total Earnings.	Total Expenses.	Average Yearly Surplus.
PLACES.				
Under 8,000 population, . . .	120	\$88,286 70	\$86,170 17	\$17 64
From 8,000 to 16,000 populat'n, . . .	124	91,630 20	88,913 70	21 91
Above 16,000 population, . . .	153	122,883 59	117,903 35	32 55
Totals,	397	\$302,800 49	\$292,987 22	\$24 72
NATIONALITIES.				
American,	125	\$100,373 00	\$96,252 66	\$32 96
English,	80	65,513 45	63,158 58	29 44
French,	2	1,572 00	1,587 20	17 40
French Canadian,	29	20,203 00	19,895 82	10 59
German,	26	20,004 00	19,574 00	16 54
Irish,	133	93,315 04	90,906 94	18 11
Scotch,	2	1,820 00	1,662 02	78 99
Totals,	397	\$302,800 49	\$292,987 22	\$24 72

TABLE XV.—*Concluded.*

CLASSIFICATION.	No. of Families.	Total Earnings.	Total Expenses.	Average Yearly Surplus.
OCCUPATIONS.				
Building trades, <i>sk.</i> , .	57	\$46,416 00	\$44,780 53	\$28 69
Boots, shoes and leather, <i>sk.</i> , .	39	29,498 00	28,740 47	19 42
Metal workers, <i>sk.</i> , .	61	51,209 00	48,983 19	36 49
" " " " " <i>unsk.</i> , .	17	12,117 00	11,856 89	15 30
Mill operatives, <i>sk.</i> , .	35	28,563 00	26,962 20	45 74
" " " " " <i>unsk.</i> , .	42	28,472 65	27,969 63	11 98
" " " " " <i>overseers</i> , .	4	4,760 00	4,110 07	162 48
Outdoor employments, <i>unsk.</i> , .	108	71,459 34	73,139 97	12 22
Shop trades, <i>sk.</i> , .	24	20,746 50	20,013 64	30 54
" " " " " <i>unsk.</i> , .	10	6,559 00	6,430 63	12 84
Totals,	397	\$302,800 49	\$292,987 22	\$24 72
KIND OF LABOR.				
Skilled,	216	\$176,432 50	\$169,480 03	\$32 19
Unskilled,	177	121,607 99	119,397 12	12 49
Overseers,	4	4,760 00	4,110 07	162 48
Totals,	397	\$302,800 49	\$292,987 22	\$24 72
SIZE OF FAMILY.				
2 adults,	4	\$3,487 00	\$2,667 50	\$204 88
2 adults, 1 child,	27	19,201 35	18,529 13	24 90
2 adults, 2 children,	92	67,932 25	65,395 01	27 58
2 adults, 3 children,	121	86,385 90	84,587 63	14 86
2 adults, 4 children,	102	79,679 79	78,131 80	15 18
2 adults, 5 children,	42	36,067 20	34,553 20	36 05
2 adults, 6 children,	9	10,047 00	9,122 95	102 67
Totals,	397	\$302,800 49	\$292,987 22	\$24 72

Proceeding to an inspection of the above, we see that families in large cities have the largest money surplus. Table XIV. showed that they had also the greatest number of families saving money. We find that the average surplus for each of the families is \$24.72. The total savings, \$9,813.27, form 3+ per cent of the total earnings. The French Canadians show the smallest money saving, and the Scotch the greatest. Among the occupations, the salaried overseers are so far in excess of the other branches, that the wisdom of making them a class by themselves is unmistakably shown; otherwise their figures would have materially affected the

averages of mill operatives. After overseers, skilled mill operatives make the best showing; while, on the other hand, the smallest surplus attaches to mill operatives, unskilled. The figures in the table, as regards kind of labor, make the facts as plain as would their repetition in the text. The size of family presentation indicates that the two extremes—the family without children and the one with the greatest number of them—save the largest sums, while the one with three children saves the least.

To exhibit the amount of savings or surplus secured by the fathers' individual labor, we present Table XVI.

TABLE XVI.—*Fathers' Surplus or Savings.*

OCCUPATIONS AND KIND OF LABOR.	No. of Families.	Total Earnings.	Total Expenses.	Average Surplus or Debt.
OCCUPATIONS.				
Building trades, . . . <i>sk.</i> , .	41	\$30,486 00	\$29,711 76	\$18 88
Boots, shoes and leather, <i>sk.</i> , .	15	9,227 00	9,415 30	—12 55
Metal workers, . . . <i>sk.</i> , .	44	33,529 00	32,390 00	25 88
" " . . . <i>unsk.</i> , .	—	—	—	—
Mill operatives, . . . <i>sk.</i> , .	4	2,510 00	2,475 00	8 75
" " . . . <i>unsk.</i> , .	—	—	—	—
" " . . . <i>overseers</i> , .	3	2,940 00	2,565 87	124 71
Outdoor employments, <i>unsk.</i> , .	16	8,984 84	8,870 21	7 16
Shop trades, . . . <i>sk.</i> , .	18	14,655 50	14,161 54	27 44
" " . . . <i>unsk.</i> , .	1	450 00	475 00	—25 00
Totals,	142	\$102,782 34	\$100,064 68	\$19 14
KIND OF LABOR.				
Skilled,	122	\$90,407 50	\$88,153 60	\$18 47
Unskilled,	17	9,434 84	9,345 21	5 27
Overseers,	3	2,940 00	2,565 87	124 71
Totals,	142	\$102,782 34	\$100,064 68	\$19 14

The fathers' savings alone, \$19.14, it will be seen, are less than the general average of \$24.72. The overseers save the most; while the skilled shoemakers, and those in unskilled shop trades, are in a state of average debt. This indicates that the "assisted" labor in these trades leads to a sufficient saving to supply the surplus averages therefor given in Table XV.

The family surplus or savings are shown next, the table following being complementary to the one preceding.

TABLE XVII.—*Family Surplus or Savings.*

OCCUPATIONS AND KIND OF LABOR.	No. of Families.	Total Earnings.	Total Expenses.	Average Surplus.
OCCUPATIONS.				
Building trades, <i>sk.</i> , . .	16	\$15,930 00	\$15,068 77	\$53 83
Boots, shoes and leather, <i>sk.</i> , . .	24	20,271 00	19,325 17	29 41
Metal workers, <i>sk.</i> , . .	17	17,680 00	16,593 19	63 93
“ “ “ “ “ <i>unsk.</i> , . .	17	12,117 00	11,856 89	15 30
Mill operatives, <i>sk.</i> , . .	31	26,053 00	24,487 20	50 51
“ “ “ “ “ <i>unsk.</i> , . .	42	28,472 65	27,969 63	11 98
“ “ “ “ “ <i>overseers</i> , . .	1	1,820 00	1,514 20	275 80
Outdoor employments, <i>unsk.</i> , . .	92	65,474 50	64,269 76	13 10
Shop trades, <i>sk.</i> , . .	6	6,091 00	5,852 10	39 82
“ “ “ “ “ <i>unsk.</i> , . .	9	6,109 00	5,955 63	17 04
Totals,	255	\$200,018 15	\$192,922 54	\$27 83
KIND OF LABOR.				
Skilled,	94	\$86,025 00	\$81,326 43	\$49 98
Unskilled,	160	112,173 15	110,051 91	13 26
Overseers,	1	1,820 00	1,544 20	275 80
Totals,	255	\$200,018 15	\$192,922 54	\$27 83

The family savings, “assisted,” \$27.83, are in excess of the general average of \$24.72. The overseers save the most; but building trades, metal workers and mill operatives (all skilled) show a considerable money surplus, and possible saving.

It has been asserted, that people with small incomes often save more, proportionately, than those with large ones. To ascertain how the case stood with the families under consideration, Table XVIII. was prepared, in which each gradation of earnings is accompanied by its particular average of surplus or debt, the minus sign indicating the latter.

TABLE XVIII.—*Gradations of Income and relative Surplus.*

GRADATIONS.	Number of Families.	Their Earnings.	Their Expenses.	Average yearly Surplus or Debt.
\$300 to \$400, .	3	\$1,078 00	\$1,177 30	—\$33 10
400 to 500, .	7	3,230 00	3,289 00	—8 43
500 to 600, .	48	26,617 79	26,863 93	—5 13
600 to 700, .	92	60,066 50	59,159 58	9 86
700 to 800, .	110	82,905 50	80,677 62	20 25
800 to 900, .	71	60,375 70	58,069 49	32 48
900 to 1,000, .	38	36,083 00	33,887 67	57 77
1,000 to 1,100, .	16	16,625 00	15,832 77	49 51
1,100 to 1,200, .	4	4,758 00	4,334 80	105 80
1,200 to 1,300, .	4	4,971 00	4,453 61	129 35
1,300 to 1,400, .	2	2,733 00	2,389 00	172 00
1,500 to 1,600, .	1	1,537 00	1,308 25	228 75
Above 1,800, .	1	1,820 00	1,544 20	275 80
Totals, . . .	397	\$302,800 49	\$292,987 22	\$24 72

The fact stands out plainly, that the recipient of a yearly wage of less than \$600 *must get in debt*. From this point (\$600) one way the debt grows gradually larger, the other way the surplus as gradually increases. The only variation from the principle that the more the income the more the savings, actually and proportionately, is found at \$900 to \$1,000, where the actual and proportionate saving are both greater than from \$1,000 to \$1,100. The disproportion in families (38 to 16) might reasonably account for the small variation that exists.

Deductions from some of the preceding tables have established the fact, that in the large cities the most people save money, and also that their savings are larger in amount than in other localities. The other side of the question, or a statement of the part of the Commonwealth, in which debt is comparatively most prevalent, may be found in Table XIX. In it we have distributed the 34 families in debt, according to their geographical position, entirely independent of population. The numbers refer to the individual family statements given in Chapter III., and a perusal of them will show the degree of destitution among these "worst-conditioned" families.

TABLE XIX.—Geographical Groups, showing Residences of the 34 "worst-conditioned" Families.

34 "WORST-CONDITIONED" FAMILIES.	Alone.		Assisted.	Fathers at work.		Fathers' Earnings.	Wives at work.		Wives' Earnings.	Children at work.		Children's Earnings.	Average of Combined Earnings.	Average Cost of Living.	Average Debt.
Eastern Massachusetts, including Boston, . (Nos. 232, 337, 346, 349, 378, 398.)	3		3	6	\$3,090 00	1	\$200 00	2	\$292 00	\$597 00	\$628 74	\$31 74			
North-eastern Massachusetts, includ'g Lawrence and Lowell. (Nos. 68, 69, 80, 83, 92, 176, 212, 306, 308, 323, 326.)	6		5	11	5,232 20	—	—	5	901 75	557 63	595 57	37 95			
Southern Massachusetts, includ'g Fall River, . (Nos. 243, 244, 246, 265.)	—		4	4	1,548 00	—	—	4	678 00	556 50	590 09	33 59			
Central Massachusetts, including Worcester, . (Nos. 58, 172, 225, 249, 281, 296, 299, 344.)	1		7	8	3,291 00	—	—	7	1,540 00	603 88	639 75	35 88			
Western Massachusetts, including Springfield, (Nos. 272, 309, 324, 330, 359.)	1		4	5	2,470 00	—	—	4	760 00	646 00	683 11	37 11			

Classifying the whole number of places (see Table I., Chapter II.) according to geographical position, and making a comparison between the whole number of families in the groups and those in debt, we ascertain that, in

Eastern Mass.,	6 families out of 58, or	10+ per cent, are in debt.
N. E. " 11 " "	100, or 11 " "	
Southern " 4 " "	74, or 5+ " "	
Central " 8 " "	82, or 9.7+ " "	
Western " 5 " "	83, or 6 " "	

It is somewhat of a singular coincidence that the average debt in each of the groups is nearly the same in amount; the percentage of debt is least in Southern Massachusetts, and greatest in the north-eastern section of the State.

The bureau has in its possession a great number of statements of earnings and cost of living in foreign countries and many states of the Union. Unfortunately, the earnings are often unaccompanied by a statement of related expenses, and *vice versa*. We are, however, able to use 48 families from our foreign returns, one from the state of Pennsylvania, and we compare these 49 with the 397 included in our late investigation.

TABLE XX.—*Comparative Statement of Workingmen's Savings.*

LOCALITIES.	No. of Families.	Earnings.	Expenses.	Surplus or Debt.	Proportion of Surplus or Debt.
Denmark, . . .	2	\$579 28	\$588 67	—\$9 39	—01 +
England, . . .	4	1,968 20	1,813 42	154 78	.078
France, . . .	4	1,228 76	1,183 34	45 42	.03 +
Germany, . . .	9	3,454 85	3,197 36	257 49	.074 +
Massachusetts, .	397	302,800 49	292,987 22	9,813 27	.03 +
Philadelphia					
(Pennsylvania),	1	820 96	749 84	71 12	.086 +
Russia, . . .	1	877 76	835 95	41 81	.04 +
Scotland, . . .	2	1,242 80	1,057 20	185 60	.14 +
Sicily, . . .	2	985 92	1,027 14	—41 22	—04 +
Spain, . . .	1	165 00	145 12	19 88	.12
Sweden, . . .	2	525 25	419 65	105 60	.201
Switzerland, . .	9	4,452 16	4,117 43	334 73	.07 +
Tunis (Africa), .	1	877 76	869 25	8 51	.009 +
Turkey, . . .	11	1,349 20	1,144 08	205 12	.15 +
Totals, . . .	446	\$321,328 39	\$310,135 67	\$11,192 72	.034 +

We deduce as the average percentage of surplus (3.4+ per cent of the entire earnings), a near approximation to the figure for Massachusetts (3+ per cent). The foreign returns indicate a surplus percentage amounting to 7.3+. Between this maximum (7.3+) and minimum (3+) per cent, complete investigations would undoubtedly fix the average per cent of workingmen's savings, as compared with their earnings, in civilized countries. Of course, this assertion is postulatory; but in statistics, it is by fixing landmarks, based upon such facts as we have, and considering them truthful, that a basis is formed, upon which other investigators can proceed; and their work will eventually show the absolute truth or falsity of what must now be considered as truth.

SUMMARY OF RESULTS.

We are well aware that the twenty tables presented in this chapter contain much food for discussion and deduction; in fact, a volume as large as the present report could easily be written concerning matters contained in this chapter alone. Conceiving it to be our duty to keep the report within a proper compass as regards size, while we have in no case failed to give all the facts, yet, we have designedly limited our description of the tables to the briefest mention compatible with lucidity, and, in our deductions, we have aimed to specially present in the text only the most striking or important points. With the family statements, in detail, in Chapter III., and the tables of this part, we consider the reader or legislator is fully supplied with facts to enable him to comprehend the question of cost of living in this state,—that is, in so far as the *figures* denoting earnings and expenses are concerned. The manner of living, as stated in the introduction, requires Chapters V. to IX. for its complete exposition.

Some intended remarks concerning extravagance and bad habits will be found, more properly placed, in Chapter IX. Our opinions concerning savings, and the possibility of a workingman acquiring a competence, are succinctly stated in the following semi-tabulated summary of results.

From a careful inspection of the facts given in this chapter, we are led to some unavoidable conclusions. They are presented as being our belief. Succeeding chapters are closed with similar statements of our belief, and in Chapter X. we institute a comparison between these results, believed to be true, and the wage system itself.

To resume the statement of our conclusions, we consider it established,—

First. That in the majority of cases workingmen in this Commonwealth do not support their families by their individual earnings alone.

Second. That the amount of earnings contributed by wives, generally speaking, is so small, that they would save more by staying at home, than they gain by outside labor.

Third. That fathers rely, or are forced to depend, upon their children for from *one-quarter* to *one-third* of the entire family earnings.

Fourth. That children under 15 years of age supply, by their labor, from *one-eighth* to *one-sixth* of the total family earnings.

Fifth. That more than *one-half* of the *families* save money, less than one-tenth are in debt, and the remainder make both ends meet.

Sixth. That without children's assistance, other things remaining equal, the majority of families would be in poverty or debt.

Seventh. That savings, by families and fathers alone, are made in every branch of occupation investigated; but that in only a few cases is there evidence of the possibility of acquiring a competence, and in those cases it would be the result of assisted or family labor.

Eighth. That the higher the income, generally speaking, the greater the saving, actually and proportionately.

Ninth. That the average saving is about *three per cent* of the earnings.

CHAPTER V.

RENTS.

Having considered what the workingman earns, and what he spends, in the aggregate, we must now pay attention to his manner of living. His expenditure must be separated into items of detail, and the facts showing what his money outlay secures him made plain. It is only by such an examination that we shall be enabled to understand his actual condition. Retaining the forms of presentation used throughout Chapter IV., we begin our exposition of the subject of rents by the introduction of Table I., which shows, with full specifications as to place, etc., the average, highest and lowest yearly rent.

TABLE I.—*Average, Highest and Lowest Yearly Rents.*

CLASSIFICATION.	No. of Families.	Total Rent.	Average Yearly Rent.	Highest Rent.	Lowest Rent.
PLACES.					
Under 8,000 population,	118	\$12,186 00	\$103 27	\$200 00	\$48 00
From 8,000 to 16,000 population,	122	14,227 00	116 61	225 00	40 00
Above 16,000 popula'n,	140	21,762 00	146 05	250 00	66 00
Totals, . . .	389	\$48,175 00	\$123 84	—	—
NATIONALITIES.					
American, . . .	118	\$17,051 00	\$144 50	\$240 00	\$72 00
English, . . .	79	9,960 00	126 08	250 00	40 00
French, . . .	2	314 00	157 00	218 00	96 00
French Canadian, . . .	29	3,099 00	106 86	225 00	48 00
German, . . .	26	3,153 00	121 27	204 00	60 00
Irish, . . .	133	14,265 00	107 26	225 00	42 00
Scotch, . . .	2	333 00	166 50	225 00	108 00
Totals, . . .	389	\$48,175 00	\$123 84	—	—

TABLE I.—*Concluded.*

CLASSIFICATION.	No. of Families.	Total Rent.	Average Yearly Rent.	Highest Rent.	Lowest Rent.
OCCUPATIONS.					
Building trades, <i>sk.</i>	55	\$8,501 00	\$154 56	\$250 00	\$96 00
Boots, shoes and leather, <i>sk.</i>	38	5,355 00	140 92	225 00	72 00
Metal workers, <i>sk.</i>	61	8,896 00	145 84	240 00	72 00
" " <i>unsk.</i>	17	2,065 00	121 47	180 00	60 00
Mill operatives, <i>sk.</i>	33	3,436 00	104 12	180 00	40 00
" " <i>unsk.</i>	42	3,430 00	81 67	120 00	48 00
" " <i>overs'rs</i>	4	582 00	145 50	168 00	120 00
Outdoor employments, <i>unsk.</i>	106	11,594 00	109 38	225 00	48 00
Shop trades, <i>sk.</i>	23	3,328 00	144 70	192 00	100 00
" " <i>unsk.</i>	10	988 00	98 80	168 00	60 00
Totals, . . .	389	\$48,175 00	\$123 84	—	—
KINDS OF LABOR.					
Skilled, . . .	210	\$29,516 00	\$140 55	\$250 00	\$40 00
Unskilled, . . .	175	18,077 00	103 30	225 00	48 00
Overseers, . . .	4	582 00	145 50	168 00	120 00
Totals, . . .	389	\$48,175 00	\$123 84	—	—

Of the 397 families, 4 were boarding and 4 owned the houses they lived in. By these facts the number of families in the rent-tables is reduced to 389. As indicative of the condition of workingmen, the fact that but *one per cent* own the houses they live in, is a most suggestive and important one. How can we even imagine many of them with a competence when so few have been able to take the first step toward independence. Examining the table, we find, naturally, that rents are highest in large cities. The table is so expressive, that a repetition of its features in the text is unessential.

We next form gradations of rents and tenements of different sizes, showing therefrom, by combination, the average rent for 3 rooms, 4 rooms, etc., and also denoting the number of families occupying the different sized tenements.

TABLE II.—*Gradations of Rooms and Rents.*

CLASSIFICATION.	No. of Fam- lies.	AVERAGE FOR RENT AND NUMBER OF FAMILIES OCCUPYING—				
		3 rooms.	4 rooms.	5 rooms.	6 rooms.	7 rooms.
OCCUPATIONS.						
Building trades, <i>sk.</i> ,	55	\$168 00	\$156 73	\$145 97	\$174 90	—
Boots, shoes and leather, . <i>sk.</i> ,	38	96 00	116 14	141 50	175 91	—
Metal workers, <i>sk.</i> ,	61	—	133 82	138 71	171 06	—
“ “ <i>unsk.</i> ,	17	—	113 08	120 00	174 00	—
Mill operatives, <i>sk.</i> ,	33	—	110 55	94 67	123 00	—
“ “ <i>unsk.</i> ,	42	—	81 20	83 13	75 00	—
“ “ <i>overscers</i> ,	4	—	—	—	135 00	\$156 00
Outdoor employ- ments, <i>unsk.</i> ,	106	98 00	99 00	122 22	143 09	—
Shop trades, <i>sk.</i> ,	23	—	154 00	133 60	156 00	144 00
“ “ <i>unsk.</i> ,	10	60 00	90 00	101 60	—	—

Kind of Labor.

Skilled, . . .	210	2	67	88	51	2
Unskilled, . . .	175	13	87	58	17	—
Overseers, . . .	4	—	—	—	2	2

Total number of families,	389
Occupying 3 rooms,	15
4 rooms,	154
5 rooms,	146
6 rooms,	70
7 rooms,	4

The average rent paid for different sized tenements by the various occupations can be seen in the above table. Owing to the many circumstances which affect the rent of a tenement, such as locality, finish or conveniences of the rooms, etc., no comparison can be intelligently instituted between the different parts of the table, but each figure stands simply as a fact. The unskilled workmen are often obliged to live in three rooms, but four and five rooms are occupied by the majority of families. Quite a large proportion of skilled workmen have six rooms; but one per cent of the families occupy seven rooms.

With the purpose in view of showing the percentage of

earnings paid for rent by the kinds of labor, and also by fathers alone and assisted, we offer here Tables III. and IV.

The presentation as regards kind of labor follows.

TABLE III.—*Percentage paid for Rents, as regards kind of Labor.*

CLASSIFICATION.	No. of Families.	Total Earnings.	Rent.	Percentage paid for Rent.
KIND OF LABOR.				
Skilled,	210	\$176,432 50	\$29,516 00	16 +
Unskilled,	175	121,607 99	18,077 00	14 +
Overseers,	4	4,760 00	582 00	12 +
Totals,	389	\$302,800 49	\$48,175 00	15.9+

The point is hence demonstrated that skilled workingmen pay the greatest proportion of their earnings for rent, while the overseers pay the smallest. The average for all is very nearly one-sixth of the income.

The father and family percentages are derived next.

TABLE IV.—*Percentage paid for Rents, as regards Fathers alone or assisted.*

CLASSIFICATION.	No. of Families.	Total Earnings.	Rent.	Percentage paid for Rent.
Alone,	138	\$102,782 34	\$18,480 00	17.9+
Assisted,	251	200,018 15	29,695 00	14.8+
Totals,	389	\$302,800 49	\$48,175 00	15.9+

We ascertain from the above exhibit that the father alone pays much the larger per cent for rent, being an excess of three per cent over that expended by assisted families. This indicates crowded rooms, inferior tenements, or both evils combined, for those families in which child workers are numerous. This is an important sanitary point, from a new source

of information, and is another fact to be borne in mind in connection with the subject of child labor.

CONDITION OF WORKINGMEN'S HOMES.

To properly judge of the exterior surroundings of workingmen's homes is comparatively easy, for a good sanitary standard is obtainable; but there is not so well a defined basis for comparison as regards interior furnishing or arrangement. What one person thinks very inconvenient, another may be perfectly satisfied with, and we have not wished to judge by any mere hypothetical standard. Accordingly, in the following table, we have limited the application of the word "condition," and the designations good, poor, etc., to the exterior surroundings, such as locality, degree of cleanliness in alleyways, back-yards, etc., and to such matters connected with the interior economy, as state of sink-pipes, privies, humidity, ventilation, etc. A reference to the individual statements will show the co-existence or co-relation of good or bad influences.

TABLE V.—*Sanitary Condition of Workingmen's Homes.*

CLASSIFICATION.	No. of Families.	Average size of Tenement.	Largest.	Smallest.	CONDITION.				
					Good.	Fair.	Poor.	Bad.	Very bad.
PLACES.									
Under 8,000 population,	119	4.87	7	3	99	9	6	5	-
From 8,000 to 16,000 population,	123	4.85	7	3	96	3	12	9	3
Above 16,000 population,	151	4.68	7	3	93	8	34	12	4
Totals,	393	4.79	7	3	288	20	52	26	7
NATIONALITIES.									
American,	122	5.25	7	3	113	4	5	-	-
English,	79	4.86	6	3	70	1	4	3	1
French,	2	4.50	6	3	1	-	-	-	1
French Canadian,	29	4.35	6	3	14	3	6	5	1
German,	26	4.54	6	4	17	2	6	1	4
Irish,	133	4.47	6	3	72	9	31	17	-
Scotch,	2	4.50	5	4	1	1	-	-	-
Totals,	393	4.79	7	3	288	20	52	26	7

TABLE V.—*Sanitary Condition, etc.*—Concluded.

CLASSIFICATION.	No. of Families.	Average size of Tenement.	Largest.	Smallest.	CONDITION.				
					Good.	Fair.	Poor.	Bad.	Very bad.
OCCUPATIONS.									
Building trades, <i>sk.</i> , .	56	4.95	7	3	51	2	2	1	-
Boots, shoes and leather, <i>sk.</i> , .	38	5.02	6	3	32	1	4	-	1
Metal workers, <i>sk.</i> , .	61	4.98	6	4	58	-	3	-	-
" " " " " " <i>unsk.</i> , .	17	4.41	6	4	9	-	5	1	2
Mill operatives, <i>sk.</i> , .	33	4.91	6	3	26	2	3	2	-
" " " " " " <i>unsk.</i> , .	42	4.74	6	4	24	2	5	8	3
" " " " " " <i>overseers</i> , .	4	6.50	7	6	3	1	-	-	-
Outdoor employments, <i>unsk.</i> , .	108	4.43	6	3	53	11	30	13	1
Shop trades, <i>sk.</i> , .	24	5.25	7	4	24	-	-	-	-
" " " " " " <i>unsk.</i> , .	10	4.40	5	3	8	1	-	1	-
Totals,	393	4.79	7	3	288	20	52	26	7
KIND OF LABOR.									
Skilled,	212	5.00	7	3	191	5	12	3	1
Unskilled,	177	4.49	6	3	94	14	40	23	6
Overseers,	4	6.50	7	6	3	1	-	-	-
Totals,	393	4.79	7	3	288	20	52	26	7

The first point of importance gleaned from the preceding table is the average size of tenement: 4.79 rooms for the average sized family of 5.14 persons. The tenements contain from three to seven rooms, and families are found at or near the two extremes, in each nationality, occupation or kind of labor.

Next, remarking condition, we find 288 out of 393 (four families out of the 397 board) tenements worthy of being reported "good," a percentage of 73 +; while 105, or 26 + per cent range from "fair" to "very bad." In large cities, the proportion in good condition is the smallest as compared with the whole number.

The majority of the tenements occupied by French Canadians are in an inferior condition, the proportion standing 14 "good" to 15 less than good. Among 17 German habitations, 4 are reported "very bad."

In the occupation specification, the shop trades are indicated as all "good"; metal workers, unskilled, 9 good to 8

inferior; mill operatives, unskilled, 24 good to 18 inferior; and outdoor employments, unskilled, 53 good to 55 inferior.

As regards kind of labor, the skilled occupy 191 good tenements to 21 inferior; the unskilled 94 good to 83 inferior.

To afford the necessary data for comparison, and also to bring before the people of Massachusetts the results of the most comprehensive system of investigation into the condition of workingmen's homes in foreign countries that was ever instituted, we present, in the following order:

First. Some special facts obtained by our agents concerning workingmen's homes in several towns and cities in Massachusetts.

Second. Information regarding such homes in other States of the Union, drawn from reports of Her Majesty's consuls there resident.

Third. Similar facts obtained in the different foreign countries, and abridged from the consular reports above referred to, yet retaining the original language.

CONDITION OF WORKINGMEN'S HOMES IN MASSACHUSETTS.

AMESBURY.—There is a more marked difference in the homes of workingmen in Amesbury than in any town our agents visited. Those of workingmen, other than factory operatives, are clean and comfortable, in good localities, with pleasant and healthy surroundings, and they have all that seems necessary to make their families comfortable; while the homes of factory operatives, as a rule, are in bad localities, crowded together, with the yards and alley-ways unsightly by reason of ashes and refuse from the houses, which render it almost impossible to keep them clean inside. But even in this place there is one very pleasing sight; several families have their windows full of house-plants in full bloom, which is in striking contrast to houses and surroundings. Our agents visited about fifty tenements here, and report only what came under their observation.

HAVERHILL.—Rents are high. Tenements of six rooms, convenient to shops, range from \$180 to \$225 per year.

Cheaper houses, in poor localities, are rented principally by the lowest class, and a large portion of them are overcrowded; some with an average of three persons to a room, in unhealthy places, where sink-pipes are sending their health-destroying gases abroad all day long, and ashes and other rubbish are scattered in alley-ways and streets. But these, fortunately, bear only a small proportion to the whole, but large enough to demand the active interference of the proper health officers.

HOLYOKE.—Holyoke has more and worse large tenement houses than any manufacturing town of textile fabrics in the state, and built in such a manner that there is very little means of escape in case of fire. The sanitary arrangements are very imperfect, and in many cases, there is no provision made for carrying the slops from the sinks, but they are allowed to run wherever they can make their way. Portions of yards are covered with filth and green slime, and, within twenty feet, people are living in basements of houses three feet below the level of the yard. One large block, four stories high, and basement, has eighteen tenements, with ninety rooms, occupied by nearly two hundred people; and yet there are only two three-foot doorways on the front, and none on the back, with an alley-way at back of only six feet in width. At present there is some spare room at the front, but it is uncertain how long it will remain so. There are also quite a number of six and eight tenement houses, with only one door at front and none at back, overcrowded, dirty, and necessarily unhealthy. Our agents visited some tenements having bedrooms into which neither air nor light could penetrate, as there were no windows and no means of ventilation, and some of them were actually filthy. It is no wonder that the death-rate, in 1872, was greater in Holyoke than in any large town in Massachusetts, excepting Fall River, and if an epidemic should visit them now, in the state they are in, its ravages would be great.

NEWBURYPORT.—Very few houses are being built for workingmen, convenient to work. Rents, as a rule, are cheaper outside the corporations than on them. Quite a number of houses have been leased by the corporations from

private parties, and invariably they have raised the rents as soon as they took possession. The majority of houses for workingmen are old, without any modern improvements, and without a great many of the necessary conveniences of a home. Rents are low, comparatively; but then wages are low, also, especially in factories. Tenements of four to six rooms range from five to twelve dollars per month, according to location. Better houses, but not within convenient distance to workshops, are only a trifle higher, and have the advantage of purer air and better surroundings.

WESTFIELD has better houses for the working classes than any manufacturing town of the same size in Massachusetts. There are very few large houses; they are mostly cottages of one or two tenements, and so situated that they are not crowded together, but have plenty of room for yard purposes; and, as a rule, they are kept very clean.

CONDITION OF WORKINGMEN'S HOMES IN OTHER STATES OF THE UNION.

CALIFORNIA.—*San Francisco.* Mechanics, if married, usually occupy neat frame-cottages; ordinary laborers occupy smaller houses. The tenement-house system has scarcely yet been adopted, but two or three large buildings, in every way fitted for the purpose, are now in course of erection in the city. Single men almost invariably live in boarding-houses. A considerable number of laborers in this city, and in the larger towns of the state, own the houses they live in. The formation of homestead associations has assisted them in this, as these societies purchase large tracts of land, and sell them in plots of twenty-five by one hundred feet, receiving payment in monthly instalments extending over two or more years. In the mining regions, towns and villages are to be met with near to the working-ground, but, if not, the proprietor of the mine provides a frame lodging-house for the use of his employés.

LOUISIANA.—Lodgings can always be procured in good and well-ventilated buildings; generally, the dwellings of artisans and laboring people, contain but one family. A good artisan or laborer can soon become possessed of a house and grounds of his own. Building companies will enter into a contract to pro-

vide a person with a house built of wood, containing two, three or four rooms, on a lot of ground of moderate dimensions, the cost of the same to be paid in instalments equal to a monthly rent, and these buildings will be situated so as to be within range of the centre of work, and easily accessible by horse-railroad communication. At the cotton-mill below the city, situated on the Mississippi River, separate tenements, with lots of ground attached, are supplied for the use of the operatives at a nominal rent.

MAINE AND NEW HAMPSHIRE.—The houses generally occupied by the working classes are detached wooden tenements, one and a half and two stories high, with three to six rooms; but larger houses are frequently shared between several families. The smaller houses are mostly the property of the occupiers, married men. Single people generally live in boarding-houses. In the manufacturing towns, the corporations frequently build large brick houses, which they let at very moderate rents to persons who are bound to board the hands at a fixed rate, and where very stringent regulations are in force. The tenement houses occupied by foreigners, who congregate together, are not kept as clean or as healthy as the others, and the American workman seldom lives in the same house with them.

NEW YORK.—*Buffalo.* The condition of the industrial classes here, is, on the whole, very prosperous, as a glance at the neat and comfortable cottages they inhabit clearly shows. These cottages are, as a rule, built of wood. They are almost invariably detached, standing, gable-end towards the street, in little gardens (averaging sixteen to the acre), well planted with vegetables. The proprietors of the great iron-works here build cottages for their own men, which they let out on the understanding that the tenancy is to terminate with the engagement. In the neighborhood of a large rolling-mill, employing between six hundred and seven hundred men, a whole village has been thus erected, all the inhabitants of which hold their houses on this sort of contingent tenure. With regard to the healthiness of the lodgings at the workingman's command, the well-paid artisan has nothing to complain of in this respect. It is different, however, with the common laborer, who lodges in some of the low saloons near the docks, or takes rooms in one of the "tenement houses" which are found here and there, even in respectable streets. These tenement houses are generally, though not invariably, in a wretched state of dirt and subject to malaria. But even the common laborer, if sober and industrious, can find healthier lodgings than in these houses.

PENNSYLVANIA.—It may be stated, generally, that one-half the industrial classes at Philadelphia occupy separate houses, the other half being in houses of an older style, and with more than one family, or with rooms occupied by lodgers. Of those living in separate houses, built within the last fifteen years, about one-half are owners of their houses, the others paying rent. In the summer season the comfort of the lodgings and houses of work-people in the country is equal to or greater than that of those in the city; but in winter the reverse is the case. and the inhabitants of the interior often suffer greatly from badly built houses. In proportion to the wages paid, the workingman of the interior might be more comfortable, but the neglect to labor continuously is greater in the country, and their actual condition less favorable in consequence of their loss of time. The transient labor of railroad building is usually performed by the Irish, who live for the time in the merest "shanties" of boards, for which, however, they pay no rent. The advantage of a garden for cultivation is usually obtainable in the country and smaller towns; but it is neglected to a great extent, not half the number availing themselves of it. In the city, a garden is rarely or never available. It may safely be stated that here in this city of Philadelphia, the industrious laborer can always find well-ventilated dwelling-rooms or houses; the premises are drained, free from miasmatic dirt, overcrowding and air-poisons, and generally within reasonable distance of his work.

GEORGIA.—*Savannah*. Rooms can be rented close by the scene of work, and the accommodations are ventilated freely, on drained premises, and without any excess of people living in one house. There is little danger to be apprehended from such results as would arise from ill-ventilated, dirty or over-crowded premises.

TEXAS.—*Galveston*. Healthy lodgings can be found near to work, well ventilated, free from miasmatic dirt, overcrowding and air-poisoning.

CONDITION OF WORKINGMEN'S HOMES IN FOREIGN COUNTRIES.

AUSTRIA.—*Ragusa*. Lodging abundant and cheap, but generally without comfort and convenience.

BELGIUM.—Those workmen who happen to be in a position comparatively good, whether in town or country, or whether they occupy a house or only a portion of one, obtain tenements generally healthy and well aired and kept. Workmen who receive but moderate wages, and who have large families, are worse lodged

in towns than in the villages, mainly on account of the difference in rent. It is in the narrow and unhealthy quarters in towns, where there is but little circulation of air, that workmen's families live, and this is observable generally in all the large towns. There are also unsavory lodgings in the country, unhealthy dens which are the refuge of the poorest class of workmen. *There are also in towns and villages retired lodgings, for migratory workmen, in a filthy state, in which they and their families are heaped together during their week of labor. But, apart from these exceptions, workmen's homes in the country are healthy and well kept. *Antwerp*: In Antwerp, unmarried artisans are generally boarded and lodged in houses specially adapted to this purpose. There are usually two occupants to one bed, and the number of beds placed in each room, varying from three to four, depends upon its size. Married workmen generally occupy a room, the rent of which varies according to its dimensions. Most of the workingmen reside in the suburbs. The size of the cottages is now fixed, by police regulations, at forty superficial yards for each family. The *Stuivenberg*, a row of forty-one workingmen's lodging-houses, is situated a short distance from the town. It contains, in all, 167 houses. Each house is two stories high, consists of five rooms, cellar, pantry and other conveniences, and has a good supply of water and a small garden at the back of the house suited to the cultivation of vegetables. It is true the artisan is probably a mile further away from his work, at this distance from the town, but this disadvantage is amply compensated for by superior accommodation and better sanitary conditions. It is a privilege to be allowed to occupy these houses, as, according to the rules of the "*Bureau de Bienfaisance*," they are only rented to respectable, well-conducted artisans, the tenant being also subjected to certain restrictions:—1. They can only be occupied by the persons named in the lease. 2. The tenant is in no case allowed to underlet or take any persons in as lodgers without the express consent, in writing, of the Administrators of the Poor; neither is he permitted, without written authority, to pursue any trade or business other than that specified in the lease, nor, for hygienic reasons, to keep on the premises, pigeons, rabbits, pigs or other animals. 3. Each tenant is expected to deposit, by the way of security, on taking possession, either the sum of 100 francs (£4), on which he receives interest at the rate of five per cent a year, or a sum of 25 francs (£1) in cash, the remainder to be paid by instalments of 50 centimes (5d.) per week. The example set by the erection of these model dwellings is, no doubt, a step in the right direction; and it is important to observe that the result of the undertaking, in a financial point of view, has been very encouraging.

e colonists, in the various parts of the
 assistance afforded them on arriving,
 , which they hold, together with the land,
 terms of their immigration agreements.

Minas Geraes, where, perhaps, the greatest
 e found, cottages are usually built by the
 merely nominal. *Para*: Houses are
 to be taken without always attending to
 ventilation, as a rule, is good; drainage,

Pernambuco: Well ventilated and
 tainable. *Porto Alegre*: Working-

odgings close to their work; nearly
 bricklayers, carpenters, or some
 lodge with their employers. The
 tilated, drained, and free from all
 ver-crowded. *Rio Grande do Sul*:
 damp, and the rooms badly venti-
 no windows. Houses suitable for
 same class of dwellings in most

lements are tolerably cheap, but
 od houses in the town are very
 for hire.

lantations, where the laborers
 ed, villages are erected at a
 r. These houses are dry and
 the owners, and form airy
 and free from miasma. In
 comfortable rooms at mod-
 wns and on the plantations,

ents are generally small
 for homes; though they
 and convenient if the
 1. *St. Helen's*: All the
 itself—except in a few

rule, for a workingman
 English artisan would

venture to live in. In the villages in the interior, the artisans superintending cotton factories or machinery of any sort are provided with houses by their employers. If he is a man a little accustomed to European society, he may, and generally does, provide a fairly comfortable house. If he is a native, however wealthy, the house is generally a most miserable, unhealthy hovel. I have known first-class English mechanics arrive to take charge of cotton factories in the interior, entitled by their contract to be provided with a good house, and, to their surprise and disappointment, on arrival, have found the house to be a miserable mud-hovel, little better than the ordinary Arab hut, and perhaps much more unhealthy, swarming with all sorts of insects and surrounded by all sorts of filth and bad smells. Those who are provided with houses, such as they are, are only the principal responsible mechanics in charge of the factories. Any other artisans are obliged to lodge themselves as best they can; and for these, decent, healthy accommodation does not exist in the country. In the large towns, such as Cairo and Alexandria, many of the large works are at a long distance from town, but the employés have to find lodgings in town; and the most trying part of their labor is the fatigue of going to and returning from their work.

FRANCE.—*Paris.* In the workmen's quarters, the competition of rentors, also the risk of non-payment, very frequent in these places, cause the rents to increase. These little lodgments of one room each are often the only revenue of houses of which they form a part. The proprietor is sometimes obliged to put the rentor out of the house by force, or be deprived of all profit from his property. He loses every year a certain number of terms; to make up for these losses, he raises by so much the price demanded from his tenants. Often, through revenge on the part of rentors thus expelled, he is menaced and even maltreated. Suites of three rooms are extremely dear; cheaper in old houses, better managed than in new ones, and generally better distributed. The old ones suit the small purses of the bourgeois; but the new ones are the most numerous, and the demolitions in Paris have greatly reduced the number of small tenements. The raising of prices, especially, resulted from unlimited speculations, which, beyond precedent, pushed forward the works of Paris, to so great an extent, during the last years of the empire. The larger apartments are too numerous and too rich; created with a view to attract the stranger to Paris and to encourage the development of luxury, they exclude therefrom, systematically, the industrial classes. Regarding occupied lodgings, they give a revenue of 204,900,000 francs for the 60,000 houses in Paris,—

an average of 3,105 francs, instead of 2,350 francs in the year 1825. This revenue is thus distributed :—

88,850,000 francs	for	250,604 lodgings,	of at least	250 francs.
68,850,000	"	"	153,346	" " 500 "
34,200,000	"	"	38,125	" " 1,000 "
18,000,000	"	"	16,866	" " 1,500 "
45,000,000	"	"	17,857	" " over 1,500 "

It has been sought, in later times, to remedy the high rate of lodgings by constructing special habitations for mechanics and small dealers. Up to this day nothing has been crowned with so much success as the constructions, by the Society of Masons and Stonecutters, on account of the co-operative society of the Epargné Immobilière (saving society in immovables). The constructions are divided into two parts,—the one destined for habitation and commerce, the other dedicated to public reunions. The first comprehends, on the ground floor, five shops; in the first story, two suites—divisible according to the needs of the shopkeeper or other occupant; in the second, third and fourth, together, forty lodgings. All lodgings are remarkable for their excellent distribution, their happy disposition, and for the comforts they unite. The kitchen is no longer used, and has been replaced by a kitchen heating-stove, placed in the interior of the principal room. This apparatus will give as much heat as is needed in the family-room, and is such that no culinary vapors are perceptible in the room. This will permit the lodgers to do their cooking while carrying on their work, which, as the workers earn but little, is a great advantage. In all these lodgings there is arrangement made for lighting and heating with gas. In all the stories there is a supply of water, with bathing-tub, and water-closet on the hermetic system. The bedrooms are parquetted and ornamented with looking-glasses. These lodgments rent at 100 to 396 francs,—a really moderate price. Such advantages have been readily appreciated by the public: for forty lodgings, there were ten rentors before the work was finished. The second construction comprehends a tasty reunion-hall, having 1,200 seats and capable of containing 1,500 persons. It is well lighted; consequently, reunions during the day are without expense for light. The price paid for the use of the hall is less, according to the location, than for other halls in Paris. Besides this large hall, there are in the same building, small saloons for reunions, which hold 80 persons, at very moderate rents also, for the accommodation of the public, whenever required. All these buildings are perfectly healthy, built, very solidly, of brick and iron.

Algeria: Here, as in all the great cities of France, artisans can not obtain cottages or separate houses, but occupy apartments in large buildings. These are badly ventilated and drained; and the difference between children who have always inhabited these crowded rooms, and those who have been brought up in the country, is very striking. *Charente*: Lodgings may be generally obtained near the work, and, as a rule, are clean, well ventilated, free from dirt, with efficient drainage, and as healthy as the locality will admit. The system of two or three families occupying the same house, whilst maintaining a certain exclusiveness by means of partitions and separate doors, is very common. *Réunion*: Each family occupies a cottage by itself, within easy distance of work. The dwellings are well ventilated and comparatively healthy.

GREECE.—*Syra*. Lodgings are bad, and difficult to obtain. Decent lodgings for single men, near their work, not to be had. Those fit for families that are to be found sufficiently near to the mechanic's work, which is all in the lower part of the town, are certainly well ventilated—doors, windows and crevices abounding; but for this reason the wind in winter, penetrating everywhere, makes the otherwise moderate cold severely felt; and the natural advantages of the climate are counteracted in these lower parts of the town by the bad drainage and general uncleanness, which there produce miasmatic dirt and air-poisoning.

ITALY.—House rent and cost of living are very low for mechanics and laborers, quite in proportion to their earnings. They are very poor, and comfort is unknown to them. They have large families, and live in one or two rooms of a house, where they cook, eat and sleep. In many instances, families of five to eight persons, men, women and children, live and sleep in one room, circumstances which affect their morals and education. At *Florence*, of late years, special houses have been constructed for the reception of the lower classes. These houses, having a large number of rooms under one roof, provide a healthier and better kind of dwelling than formerly existed. They are situated either in the city itself or in the immediate vicinity, but the supply is very inadequate to the demand. They are well arranged, drained and ventilated. In the old houses, the drainage is exceedingly defective, and this, together with the filthy habits of the inmates, would inevitably produce typhoid and other fevers, were it not for the compulsory ventilation. Even in the better houses, it is rare to find doors or windows that could by any possibility be rendered tolerably impervious to air. *Sicily*: As to the general wretchedness of the habitations of the working

classes in Sicily, all accounts agree. The only place in which they are said to be not utterly abominable is Messina. In Palermo and Catania, as a rule, light and air can be admitted into the lurid dens only by their doors opening upon the street. A single room or hovel is often occupied by a whole family, and not unfrequently, in addition, by pigs, dogs and poultry. In the sulphur-mining districts of the interior, there are great numbers of boys, from ten to fifteen years of age, employed; their habitations consist of holes excavated in the mountain sides, where they live and sleep in the most barbarous manner. *Brindisi*: It is difficult to procure healthy lodgings. Those of native workmen are generally on the ground-floor; they are damp and badly ventilated, and not well drained. They consist of from one to three rooms. *Naples*: A workingman in Naples can not find healthy lodgings near his work. The ordinary lodgings inhabited by the working-classes, called "bassi," are damp, overcrowded, unventilated, and in every respect filthy. Tolerable lodgings are expensive, and quite beyond the means of an artisan. A great number of workmen reside with their families in villages outside of the city and octroi limits, many as far as Torre del Greco, about eight miles from Naples. In these villages, lodgings are cheaper and better than in the city. *Piedmont and Lombardy*: In the dark and squalid lanes where formerly the working-classes were crowded together, light, air, and the common necessities of life were wanting. Sickness reigned; the strength of generations was wasted; scrofula, which still mows down many victims, was more extensively generated; and epidemics spread from these centres of contagion to the more healthy quarters of the city. Even now, but little has been done to improve the dwellings of the artisans, though the rent they pay is not light. At *Milan*, where the workmen live in distinct quarters, efforts are being made to improve their dwellings. A large block of buildings, erected on the system first practised at Mulhouse by the "Società Edificatrice di Case Bagin e Lavatoi Pubblici," were inhabited in 1868 by 244 families (in all, 1,204 individuals). The rooms are 632 in number, of which 74 are used as shops and laboratories. Near the buildings is a public washhouse with 120 places. An infant school has recently been opened for the children of the artisans living in the houses. At *Turin*, a similar society has met with success, chiefly from the promoters having built a block of habitations suitable to the middle classes rather than to artisans. In this city, the condition of the working classes, as to their lodgings, is different from that of the population of Milan. There is no absolute workman's quarter; in all parts of the town, the garrets of the palaces form the abodes of the poorer classes. As a rule

they must be wretched rooms, bitterly cold in winter, and hot in summer. In the suburbs, the lodgings of the artisans may be better, and are probably cheaper than in the centre of the town.

Rome: The very poorest classes are ill-lodged on the ground-floors, which, on account of the singular dampness of the soil, are productive of the tertian ague: for most of the Roman cellars are full of water at all times, and no doubt the evaporation goes on all through the house. Of course this does not apply to every house, as in situations where there is good ventilation there is no danger.

Venice: Good dwellings for workmen are scarce, but a company has been formed, which is now under way, for the purpose of building houses for the working-classes, which will greatly ameliorate their condition. At present, the greater part of the workmen are badly lodged, and inhabit houses on the ground-floor which are damp and insalubrious.

MOROCCO.—*Morocco*. In the towns, the poorer classes of workers are lodged on the ground-floor. The drainage and ventilation are not good. In the country, the population live in huts or tents. Moorish families live each in a separate house, their law obliging them to keep women secluded; but amongst the Jews several families often occupy one house.

NAVIGATOR'S ISLANDS.—A person can obtain a house wherever he chooses to take up his quarters. The houses are too open for foreigners, but suitable for the islanders. No drains are required, nor is there any dirt, or obnoxious smells, about their dwellings.

NETHERLANDS.—There is no difficulty in procuring good and healthy lodgings within a moderate distance from the place of employment. There is but little danger from overcrowding, want of ventilation, or dirt; there is more from defective drainage. Drainage is, in many parts of this country, attended with many difficulties and much unpleasantness.

NORWAY.—*Christiana*. Four capacious lodging-houses have been erected for the laboring classes, affording accommodation for fifty families. Each family being furnished with one room eleven feet by eleven, and ten feet in height, with kitchen, loft, cellar, a yard containing a large wash-house for the joint use of the inmates, enabling them to take in washing. In consequence of these lodging-houses having answered so satisfactorily, a fifth is now in course of erection. Not only is the accommodation thus furnished superior to what the laboring-man can obtain in private lodgings, or to what

he has been accustomed to, but it is also cheaper ; and by being under the supervision of the police, these dwellings are kept in better order, and cleaner. In order to accommodate larger families, detached cottages have been contemplated to be built on the outskirts of the town, to be on the same principle, and with the same laudable objects in view.

PERSIA.—In Persian towns large caravanseries, built in former times to accommodate a far more numerous population, are generally to be found. These buildings, though often in a more or less ruinous condition, can still furnish shelter for a large number of workmen. The court-yards of mosques, and sheltered corners in various parts of the towns, are the refuge of a large number of the still poorer classes. Of the workmen who are married, some possess a small piece of land, which helps them to maintain their family. Drainage is most imperfect ; but ill-closing doors and ill-fitting windows leave nothing to be desired in the way of ventilation. *Bushire*: With regard to the question of healthy lodgings, it may be briefly stated that the population live in small houses made of sandstone and mud, and tents made of date-leaves. The houses are crowded together, without any regularity, leaving very narrow, dirty and winding lanes, too narrow for two men to walk abreast. The walls of the surrounding houses, closing in these lanes, are very high, and give to the houses an appearance of dungeons for prisoners. These high walls cut off, to a great extent, the access of fresh air. As there is no arrangement of any kind for the removal of the night-soil, etc., each house, especially those further removed from the sea, has a hollow dug in the privy, in which the dirt collects year after year, and charges the atmosphere with various noxious and poisonous effluvia, which prove a fertile source of the different low forms of fever, outbreaks of cholera, etc. The suburb is, in most parts, pretty clean, and is not so much crowded, and the sources of malarious and other poisons are, comparatively speaking, few. *Tabreez*: The laborers, even of the poorest classes, generally own the houses in which they reside. They are built of mud, and the roofs, which are flat, are plastered with the same material ; they last a considerable time, and seldom require repair. Sometimes, but rarely, a house is occupied by two families. Ventilation, drainage and cleanliness are unknown ; but the dry state of the atmosphere renders these sanitary measures less absolutely necessary than in more humid climates.

PERU.—Workmen can generally find lodgings near their work, but rent is high. Ventilation and drainage in Lima receive a good deal of attention from the local authorities.

PORTUGAL.—*Madeira*. The habitations of the laboring classes are small and uncomfortable, and proper cleanliness, ventilation and drainage are neglected; but the salubrity of the climate lessens the injury to health from those evils. *Oporto*: It is the habit of the great majority of the handicraftsmen in the large cities to lodge for five days in the town, and to pass Saturday and Sunday nights with their friends or families at a distance of from two to eight miles in the country; and, as their lodgings in the towns are bad and small, their migration to country quarters for two days in the week is probably not to the disadvantage of the health or the morals of the working-classes. *The Azores*: Cottages, in general, poorly built, dirty, ill-drained, and crowded together.

PRUSSIA.—*Cologne*. Workmen's families generally occupy from one to two rooms without any comforts. *Hamburg*: Dwellings are generally healthy, but rents are high.

RUSSIA.—*Nicolaieff*. Some workmen live in their own cottages, which are built of mud and thatched with reeds, tolerably comfortable in summer, but very close and confined in winter, when every crevice, crack and keyhole, of windows, doors and apertures are obliged to be caulked and puttied over, which, with the heating and cooking with reeds, flax-stems and dried manure, breeds much sickness, and carries death, amongst children especially. Foreigners, however, are known to have suffered equally as much, and in some instances more, through sickness from cold, by pursuing an opposite course, and foregoing native precautions against the inclemency of the winter. *Odessa*: It is difficult to obtain house-room on account of the exceedingly high rents. Furnished lodgings are scarcely known here. The lower class of dwellings are miserable places of abode, and the filth and stench which generally surround them must breed disease. As in Nicolaieff, the ventilation of houses of even the better order is very imperfect, and the only means of letting in fresh air is through one pane, which is made to open. The town is ill-supplied with water, being dependent on the fall of rain for what is fresh, which is collected in cisterns. For common purposes, water of a brackish quality is conveyed from a distance to the town by pipes, and this causes an increased item of charge to the people; but there are hopes that in the course of a year or two a sufficient supply of wholesome water will be obtained from the Dniester.

Poland: The dwellings of the industrial classes in Poland are exceedingly bad; no effort is made to improve them or to take any steps whatever in that direction. In *Warsaw*, however, a workman might find fairly wholesome and by no means high-priced lodgings, at no inconvenient distance from his work, and probably not be so badly off, in this respect, as in the great centres in more civilized countries. *Poti*: Houses very bad, both in construction and situation, and all built of wood. *Riga*: In a town of 100,000 inhabitants, crowded into flats and cellars, a workman can never be at any great distance from his work. As a rule, house-ventilation is as bad as possible; the drainage is almost entirely effected by gutters running along the sides of the streets; and miasmatic dirt, overcrowding and air-poisoning exist as the normal condition of all dwellings, except those of the very highest class. *Taganrog*: Lodgings are provided generally by the employers of all excepting day-laborers. A stage made with boards, ranged round a heated room, on which any convenient number of individuals lie down in a row, under cover of their upper clothing, is the customary accommodation in winter. In warm weather the bare ground, and canopy of heaven, with any kind of pillow, and some light covering as a protection from gnats, is looked upon as the most convenient place for repose. Healthy, ventilated lodgings are not obtainable by artisans, and are with difficulty to be found by any class.

SAXE-COBURG.—The dwellings of the working classes are not as healthy as could be wished. The general health is, however, by no means bad. The houses or lodgings are all small, and often much crowded where the families are large. It frequently occurs that poultry is kept in the room where the family lives. A pigsty and dunghill are always sufficiently near the entrance of the house to allow the inhabitants to enjoy their effluvium. As far as ventilation is concerned, it appears to be useless to try to introduce it. Where it has been made a point of, it was soon made useless by stopping up the aperture made. These houses never have cellars or drains. The houses sometimes stand on small pieces of ground, which are used for growing potatoes. Where no field or garden adjoins, strips of land are always to be hired, which can be used for that purpose.

SAXONY.—The Saxon workman seeks to give an air of cleanliness and neatness both to the exterior and interior of his dwelling, and as there is a natural tendency in the German race to acquire property, or something they may call their own, the evils of large barrack lodgings are obviated, at least in the lowlands, so that a house has rarely more than one or two families in it.

SPAIN.—*Balearic Islands*. The artisans usually live in healthy parts of the city, in humble dwellings, near to their work. *Porto Rico*: The workman generally lives in a single room, say ten feet square, without windows or aperture, except the door leading from the patio or court. So dense a population, in so small a space, is naturally very much crowded. Some of the houses are three stories high, and all are built strongly of brick and mortar. They are all on the same plan,—an oblong square, in the centre of which is the patio, or open court. Around these patios are the abodes of the working-classes; these are rooms, or, as we should call them, cellars, about eight or ten feet square, paved with stone, having one door, and no other opening, for free ventilation. In a large house there may be eight or ten of these abodes; they all lead into the patio, in the centre of which is the well, supplied by rain-water from the roof of the house, which is a flat for the purpose, and is made use of as a promenade in the evening, thus contaminating the water-supply with rejected cigar-ends and the eternal spitting of Spaniards. Near the well, in the patio, is the cesspool, so near that its contents must inevitably percolate into the drinking-water, which may, in some measure, account for the remarkable fact that although I have been here eight years, I never heard of one being emptied. *Valencia*: Lodgings are obtained close to work. Ventilation is not generally good; drainage is only middling.

SWEDEN.—*Gustafsberg*. Some of the best model dwellings that I have seen are at the chinaware factory at this place. About a dozen have been erected within five minutes' walk of the factory, and it is the purpose of the proprietors to continue their construction till the most of their hands—400—are supplied. Each house is designed for only two families, and is 46 feet long, 28 feet wide and one and a half stories high. There are three rooms to a family, besides cellar, and a garret for each family reached by portable steps from the veranda. Ventilation and drainage are excellent, and there is a supply of good water. Each family has the use of quarter of an acre of good, smooth ground, which is divided into a vegetable and flower garden. Everything about them is thorough and neat, and they might readily be taken as the homes of the well-to-do middle class. Of course, the oldest and best hands have the preference in obtaining such dwellings. *Gottenburg*: The lodgings of the laboring classes are, in general, confined to one room and a kitchen for each family, with needful outhouses for fuel and other necessities; in some cases, two families have one kitchen in common. In the model lodging houses, where the rent, in general, is more moderate than in private houses, very stringent rules as to cleanliness and

order are enforced, and the apartments are, almost without exception, well-ventilated and cleanly kept. *Stockholm*: Lodgings suitable for artisans are plentiful, and are situated within a short distance of their work. The poorer classes of workmen often sleep several in one room, but this applies chiefly to day-laborers and those who cannot depend upon a weekly salary. The artisans, when unmarried, occupy one room apiece. The generality of the rooms are low, and not very well ventilated, especially in winter, when, owing to the cold, double windows are used, the inner ones being pasted up so as to exclude all air. No cesspools or other accumulations of decomposing matter are tolerated, and, except during the summer months, all unpleasantness is avoided. A very efficient staff of scavengers is maintained, and, on the whole, the town is at least as well off, in respect to health, as regards drainage, as most other capitals.

SWITZERLAND.—The majority of the working classes reside in the country in their own cottages, where their work is sometimes brought to them, and they seldom have to go far to it. Their cottages are generally clean and comfortable, but, as in all cold climates, the ventilation is defective, and further, the smells from the dung, often heaped up close to the very door, and the liquid manure, are at times very offensive, though they do not appear to produce any bad effects.

TRIPOLI.—In the country, both employers and employed occupy tents, or live in the open air. In the towns and villages, the houses of the laboring classes are, in every respect, of a very inferior description, as regards drainage, cleanliness, and, indeed, everything that conduces to health. Lodgings can be found at no great distance from work.

TURKEY.—*Anatolia.* The married men, of the lowest class, have each, in general, a little house, consisting of two rooms. They are fairly well ventilated, for the wind and rain come in everywhere through the chinky walls and roof. Outside is a small courtyard, enclosed by high walls; it acts as general dustbin and sink, till a heavy rain, or some extra activity of the women, clears it out; this happens once a month. There is a drain, but it is seldom in working order, and it is invariably too poorly built to be of much service at any time. *Bagdad*: The houses are ill-ventilated, drainage is very bad, and miasmatic dirt, overcrowding and air-poisoning are the rule throughout all the towns of Turkish Arabia. The form of the houses is a square or parallelogram, surrounding a court into which the rooms open; and there is seldom any opening to the outside of the building except the entrance-door. The roofs are

flat, and on these the occupants sleep in summer. The houses consist of only one floor, none having an upper story. *Beyrout*: A workingman can usually find pretty good lodgings or houses at a short distance from his work, outside the town,—they being more healthy and better ventilated than within the walls. *Epirus*: The journeymen's houses are of a humble kind, always situated in the least expensive quarters, and built of the cheapest materials the place affords. Some of them have but one, others two, and, more rarely, three rooms,—all on the ground floor. In the towns, itinerants and unmarried journeymen, who do not live with their relations, sometimes lodge in khans, but more frequently in mandras, which are a sort of small barrack, built round a courtyard, with one entrance from the street. To each mandra there is a cook-house, a well, and other conveniences in common. Mandras are supposed to be for the exclusive use of men. The dwelling-houses are generally well ventilated. Main, or street drainage is as yet but imperfectly carried out; but, as a rule, the inhabitants of the towns are cleanly, and careful to prevent the accumulation of miasmatic dirt on their premises. There is no overcrowding, unless it may be at times in the mandras. *Koordistan*: The houses inhabited here, generally speaking, consist of a small cow-house and two rooms made of mud and rough stones. Ventilation there is none, and the previously stifling atmosphere is increased by the only means available to the poorer classes for warming their dwellings. Owing to the absence of coal, and the scarcity, and consequent exorbitant prices, of wood and charcoal, this is done by burning cakes called "tezek," made of dried cow and horse dung—collected during summer and winter in a trough, which stands at the side of every house—mixed with straw. The odors exhaled from the wretched cow-house, with the stench, filth and closeness engendered in apartments so tenanted, is indescribable; and, in the absence of drains, proper closets, and ventilation of any kind, would decimate the country, were it not for the extraordinary salubrity of the air. As it is, in spring and summer, typhus fever and other contagious diseases—all traceable to overcrowding and want of drainage—prevail to an extraordinary extent, and carry off or disable numerous victims. *Monastir*: The dwellings of the agricultural class are composed of earth of a clayey soil mixed with straw-bricks of the same material, left to harden in the sun. Glass windows are seldom to be seen; a simple wooden shutter is used to close the hole that gives light to the common apartment. The floor is not planked, and, in the winter, the inhabitants are squatted in a circle around a wood-fire, the smoke of which finds its way out by the roof. In the towns, the houses are better; they are more or less weather-proof,

are glazed, and have fireplaces with chimneys. *Rhodes*: Lodgings, though deficient in many respects, are healthy, free from miasmatic dirt, overcrowding or air-poisoning, and can be procured close to the place where the work may be going on. *Scutari*: Lodgings here are very difficult to find, and are over-ventilated and badly drained. *Servia*: Lodgings are high priced and poor. The houses consist only of a ground-floor, and there is no house-drainage. *Smyrna*: The dwellings of the peasantry, in the villages, generally consist of rude huts, built of stone and mud, with unglazed windows and rough wooden shutters, the roof being formed of trunks of trees placed across the wall, and covered with a sort of thatch of reeds or bushes, battered down with earth and gravel, until rendered impervious to the rain.

URUGUAY.—*Monte Video*. Lodgings are always overcrowded, and without any provision for healthy ventilation or cleanliness. If the workingman's occupation be in town, he can obtain lodging at a not inconvenient distance.

VENEZUELA.—Dwelling-houses can commonly be procured, both in towns and the agricultural districts, well ventilated and drained, and free from miasmatic dirt, overcrowding and air-poisoning, and can almost always be found (population being so scanty) at a short distance from the places where work has to be performed.

Bearing in mind the points demonstrated by the tables of this chapter, and the information given concerning workingmen's homes in this and other states and foreign countries, we are led to consider the following summary of results as being established on facts.

SUMMARY OF RESULTS.

First. That but an insignificant proportion of workingmen, whose condition we investigated, are able to own their own houses.

Second. That, among them, the families containing the greatest number of child workers occupy the most crowded rooms and the inferior class of tenements.

Third. That about three-quarters of these workingmen's homes are in good condition as regards locality and needful sanitary provisions; but—

Fourth. That nearly one-half of the unskilled laborers live in inferior tenements.

Fifth. That while the homes of these workingmen compare most favorably with those in foreign countries and other states of the Union, yet, in certain of the United States, workingmen have better opportunities for acquiring homes of their own.

CHAPTER VI.

FUEL.

The outlay for fuel forms one of the most necessary items of expenditure in a workingman's cost of living. Food must be cooked, and during our oftentimes rigorous winters the securing of the necessary warmth in homes becomes as essential as a proper supply of food. As a matter of fact, the stomach is often stinted that the body may be kept warm.

It is one of the most democratic of expenses, as regards place of residence, occupation or pecuniary condition. While the rich man satisfies his hunger or appetite with the best or richest food, the poor man *can* supply his needs with articles of a plainer and cheaper fare, and may be healthier for it.

But it requires the same kind of fuel, and as much of it, to properly keep a poor man warm, as it does a rich one, and while the rich man may use many times the quantity of fuel to heat his mansion that the poor man does to warm his tenement, yet the individual requirements are the same, and the amount expended forms a much larger percentage of the workingman's income than it does in the case of the millionaire. The subjoined table shows the amount expended for fuel by the families visited, subdivided in the presentation as regards places, occupation and kind of labor.

TABLE.—Average Yearly Cost of Fuel.

CLASSIFICATION.	No. of Families.	Cost of Fuel.	Average Yearly Cost.
PLACES.			
Under 8,000 population,	120	\$5,400 65	\$45 01
From 8,000 to 16,000 population,	123	5,411 65	43 99
Above 16,000 population,	152	6,532 40	42 98
Totals,	395	\$17,344 70	\$43 91
OCCUPATIONS.			
Building trades, <i>sk.</i> ,	57	\$2,575 70	\$45 19
Boots, shoes and leather, <i>sk.</i> ,	38	1,738 25	45 74
Metal workers, <i>sk.</i> ,	61	2,933 20	48 09
" " " " " " <i>unsk.</i> ,	17	637 20	37 48
Mill operatives, <i>sk.</i> ,	35	1,606 40	45 89
" " " " " " <i>unsk.</i> ,	42	1,707 75	40 66
" " " " " " <i>overseers</i> ,	4	214 00	53 50
Outdoor employments, <i>unsk.</i> ,	107	4,347 00	40 63
Shop trades, <i>sk.</i> ,	24	1,209 60	50 40
" " " " " " <i>unsk.</i> ,	10	375 60	37 56
Totals,	395	\$17,344 70	\$43 91
KIND OF LABOR.			
Skilled,	205	\$10,063 15	\$46 81
Unskilled,	176	7,067 55	40 16
Overseers,	4	214 00	53 50
Totals,	395	\$17,344 70	\$43 91

The uniform necessity of the expense for fuel finds a parallel in its uniform cost. In the various places the variation is hardly appreciable. The overseers and skilled workmen in shop trades expend somewhat more than the other workingmen, but there is not the difference of the price of a ton of coal or a cord of wood between the averages of the skilled and unskilled workingmen, considered as classes. Two among the families visited obtained their supply of fuel from the streets, the children being obliged to collect it; but, happily, such destitution was confined to a small number of families.

Where all the rooms of the tenement are situated upon the same floor, the heat from the kitchen fire is thoroughly utilized, but if the kitchen and living-room are in different stories, two fires are necessary for comfort, at an increased expense, part of which is actually a loss. The building of tenements upon

the "flat" system, or the use of a stove so constructed as to carry off culinary vapors, thus rendering it tolerable in the living-room, would seem to be practical ways of diminishing the outlay for fuel and securing the full benefit of that used. Such stoves as are mentioned are in use in France, Sweden and other European countries, thus materially reducing the expense for fuel, which, in those countries destitute of a coal-supply, or without facilities for its cheap transportation, is inordinately high. In many countries, the poorer classes are obliged to depend upon peat or compressed fuel made from refuse of various kinds. Charcoal is much used by those who can afford it.

To show the quantity of fuel used yearly by workingmen in Massachusetts, we append two statements, specially obtained.

1st. An outdoor laborer used—2 tons of coal (at \$9.50), \$19; 1 cord of wood, \$8; 1 cord of wood, \$5.50; total cost, \$32.50.

2d. A skilled mechanic made use of—3 tons of coal (at \$10), \$30; 2 cords of wood, split, \$22; 1 cord of wood, split, \$8.50; a total of \$60.50.

The only point deducible from our family statements as regards fuel, which could be considered as a result, would be founded on its proportionate cost to the total expenses; as its percentage is fully considered in the comparison which we institute in Chapter X., with Engel's law, its special presentation here is unnecessary.

CHAPTER VII.

Food.

The item of expense for the means of subsistence is the largest, pecuniarily, that the workingman has to meet, and is the one of most vital necessity. Absorbing, as it universally does, much more than half of his income, it is the one in which retrenchment is most often instituted in cases of prolonged sickness, loss of employment or reduced wages. Then it is found that to satisfy one's hunger is not so expen-

sive as it is to gratify one's appetite. Omitting all discussion as to the merits or demerits of any particular kind of diet, we pass directly to the presentation of averages of expenditure, of the families considered, for food in the aggregate, and for groceries, meat, fish and milk, which are the prime necessities. For the consolidation of expenses of this nature, we have included under the head "groceries" those articles commonly called provisions, and also kerosene oil, which is almost universally used for lighting purposes by workingmen, and which is, as universally, purchased at grocery stores. This expense for light varies from \$3.60 to \$6 per year, being for from 18 to 30 gallons of oil at 20 cents per gallon. Four families, whose food outlay could not be accurately subdivided, have been dropped in the following table, which is explicit as regards occupations and kind of labor.

TABLE I.—Yearly Average Expenditure for Food.

CLASSIFICATION.	No. of Families.	Size of Families.	Yearly Average for Food.	SUB-DIVISIONS.			
				Meat.	Fish.	Milk.	Groceries.
OCCUPATIONS.							
Building trades,	56	4.46	\$420 61	\$88 68	\$8 93	\$21 14	\$301 87
Boots, shoes and leather,	38	4.77	411 65	79 75	8 59	18 74	304 57
Metal workers,	61	4.54	424 21	93 09	8 04	20 66	302 42
" "	17	5.59	413 77	73 85	10 39	19 60	309 93
Mill operatives,	33	4.97	438 50	91 95	7 78	25 08	313 70
" "	42	5.88	421 73	74 05	11 86	19 74	316 52
" " overseers,	4	5.25	469 12	111 27	15 31	28 76	313 79
Outdoor employments,	108	5.66	413 59	69 60	10 46	19 02	314 52
Shop trades,	24	4.88	460 25	95 39	10 94	22 08	331 84
" "	10	5.90	410 96	69 37	10 14	16 48	304 97
Totals,	393	5.14	422 16	\$81 48	\$9 68	\$20 38	\$310 63
KIND OF LABOR.							
Skilled,	212	4.67	\$427 31	\$89 61	\$8 66	\$21 29	\$307 75
Unskilled,	177	5.72	414 93	71 05	10 77	19 10	314 01
Overseers,	4	5.25	469 12	111 27	15 31	28 76	313 79
Totals,	393	5.14	\$422 16	\$81 48	\$9 68	\$20 38	\$310 63

As in the case of fuel, the averages for food seem limited, by a natural law, to prescribed bounds. From the \$410.96 of the unskilled workmen in shops, to the \$469.12 of the salaried overseers, seems but a slight step, yet these figures are the minimum and maximum ones, and the other averages range themselves intermediately. Between the skilled and unskilled, as classes, there is a variation of but a trifle more than ten dollars. Inspecting the sub-divisions, we find the overseers' families the greatest consumers of meat, those of skilled shop-mechanics coming next, while unskilled workmen of the same branch and outdoor laborers make the smallest outlay for animal food.

For fish, overseers spend the most and skilled mill operatives the least. For milk, overseers the most and unskilled laborers in shops the least. For groceries, the largest outlay is by those in skilled shop trades, the smallest by those in the building trades. A great number of most interesting and instructive comparisons can be formed by means of the facts presented in the above table.

To complete the showing, an exhibit based on nationality and size of family immediately succeeds.

TABLE II.—*Food Expenditure as regards Nationality and Size of Family.*

CLASSIFICATION.	No. of Fam- ilies.	Food, Yearly Average.	CLASSIFICATION.	No. of Fam- ilies.	Food, Yearly Average.
NATIONALITIES.			SIZE OF FAMILY.		
American,	125	\$406 72	2 adults,	4	\$481 00
English,	80	445 36	2 adults, 1 child,	27	348 87
French,	2	436 10	2 adults, 2 children,	92	380 87
French Canadian,	29	414 15	2 adults, 3 children,	121	407 37
German,	26	441 38	2 adults, 4 children,	102	461 22
Irish,	133	422 36	2 adults, 5 children,	42	479 93
Scotch,	2	416 55	2 adults, 6 children,	9	556 86
Totals,	397	\$422 16	Totals,	397	\$422 16

The English, traditionally a race of hearty eaters, lead in food outlay, while the Americans, for once, have their name attached to a minimum expenditure; between the extremes,

family three times. About 56 per cent of the families have meat twice a day, and 22 per cent three times. The ratios in each occupation are shown as plainly as is possible in the table. The skilled workmen lead in the consumption of the kind of food considered.

Much has been said and written concerning the "higher level" of the American workingman as regards his manner of living. In this chapter, we have to deal only with his food; and, with the desire of shedding some light on the question of "higher level," we insert some comparative statements as regards this part of his manner of living. The Swiss are a frugal but well-fed people, and in comparison with a laborer of that nationality we place an American mechanic and an Irish-born outdoor laborer, as regards variety, quantity and quality of food used by themselves and families.

The home statements were specially obtained for this purpose, and the foreign one is derived from a report of one of Her Majesty's consuls.

TABLE IV.—*Comparative Showing of the Manner of Living in Massachusetts and Switzerland.*

ARTICLES.	QUANTITY CONSUMED YEARLY BY FAMILIES OF—		
	American Mechanic. 2 adults, 4 children.	Swiss Laborer. 2 adults, 6 children.	Irish-born Laborer. 2 adults, 5 children.
Bread,	—	3,210 lbs.	—
Brown Bread,	52 loaves.	—	52 loaves.
Biscuit,	37 lbs.	—	—
Crackers,	41 "	—	80 lbs.
Milk,	365 qts.	858 qts.	380 qts.
Coffee,	19 lbs.	57 lbs.	6 lbs.
" (chicory),	—	About \$1 worth.	28 "
" essence of,	—	" \$2 "	—
Tea,	12 lbs.	—	12 lbs.
Sugar,	296 "	—	198 "
Eggs,	59 doz.	—	36 doz.
Butter,	130 lbs.	—	109 lbs.
Cheese,	69 "	—	57 "
Molasses,	10 gals.	—	12 gals.
Flour (wheat),	3,136 lbs.	57 lbs.	1,568 lbs.
Indian Meal,	24 "	—	—
Salt,	20 "	86 lbs.	15 lbs.
Soda, Cream Tartar, etc.,	\$1 worth.	—	—
Meat (bacon),	—	11 lbs.	—
Beef, soup and corned, . .	80 lbs.	—	299 lbs.
Beef and Pork, roasting,	160 "	—	129 "

TABLE IV.—*Concluded.*

ARTICLES.	QUANTITY CONSUMED YEARLY BY FAMILIES OF—		
	American Mechanic, 2 adults, 4 children.	Swiss Laborer. 2 adults, 6 children.	Irish-born Laborer, 2 adults, 5 children.
Mutton,	69 lbs.	—	—
Poultry,	90 "	—	23 lbs.
Fresh Pork,	43 "	—	—
Salt Pork,	59 "	—	130 lbs.
Fish, salt, fresh and dried,	160 "	—	268 "
Potatoes,	14 bu.	53 bu.	24 bu.
Cabbage (sauer kraut), .	—	50 hds. p'ckl'd.	—
"	—	—	400 lbs.
Onions,	2 bu.	—	1 bu.
Beans,	52 qts.	—	52 qts.
Other vegetables and fruit,	\$30.15 worth.	\$6 worth.	\$7 worth.
Dried fruits (currants, etc.),	12 lbs.	—	—
Canned fruit,	30 "	—	—
Raisins,	25 "	—	—
Lard,	147 "	57 lbs.	91 lbs.
Pigs' grease,	—	57 "	—
Spices (assorted), . . .	2 lbs.	—	—
Pickles,	\$1.50 worth.	—	—
Ketchup,	\$2 worth.	—	—
Pepper,	2 lbs.	—	2 lbs.
Mustard,	50 cts. worth.	—	25 cts. worth.
Vinegar,	3 gals.	—	2 gals.

In some few cases, when the exact weight or measure was not obtainable, we have indicated the comparative proportion by a money value. It will be seen that bread, milk, potatoes and cabbage form the major items of the Swiss laborer's diet; coffee he freely indulges in, but eschews tea; salt furnishes his principal savor. The meat-eating propensities of our workingmen are fully demonstrated, and, generally speaking, the variety and quality of his other articles of diet (especially the uniform use of white bread), unmistakably indicate a superior style of living in this respect.

A careful reading of the family returns in Chapter III. will give additional information, of a corroborative nature, concerning the food of our industrial classes. As supplementary to those presentations, we give hereinafter the results of inquiries made by our agents as to the manner of living in corporation boarding-houses in the city of Lawrence, in this

state, some of the rules and regulations being mentioned, also number of boarders of each sex, price for board, etc.

MANNER OF LIVING IN CORPORATION BOARDING-HOUSES.

Arlington.—Fifty boarders, men and women; price paid: men, \$4; women, \$2.75. Breakfast: meat, potatoes, bread, butter, pies, doughnuts, cake, tea and coffee. Dinner: tea, coffee, meat, potatoes and other vegetables, pickles, bread, butter, pudding and pie. Supper: tea, bread, butter, cheese, sauce, cake, doughnuts, pie and meat. Have two kinds of meat at every meal on men's table, and twice per day on women's table; otherwise they live the same. No extra charge for washing. In all the boarding-houses they have baked beans Saturday night and Sunday morning, and fish for dinner on Fridays, but have cold meat besides. Nothing is lost, as what is left from one meal is warmed up for the next. All boarding-house keepers, on the corporation, pay only a nominal sum for rent, not half the rent value of the houses.

Atlantic.—Eighty boarders, all women; price paid: \$2.50, including ordinary washing. Doors locked at ten. Two persons to each room. Have a sitting-room in common. These remarks apply to all the corporation boarding-houses. In this boarding-house the proprietor exercises a strict supervision over boarders, and if they do not conduct themselves properly they are expelled. Breakfast: hot biscuit and butter, pie and tea. Dinner: meat, either roast, boiled or fried, and potatoes, with other vegetables occasionally, pie or pudding and tea. Supper: tea, toast or bread and butter, sauce, and pie or cake. The Atlantic corporation allow \$1 per month for each girl boarder to the boarding-house, which is a premium for girls to leave home and go to such houses. Each corporation fixes the price of board for women. There is no reason why men should pay so much more for board than women, and the rates should be equalized; for it is the general testimony of boarding-house keepers that they would as soon keep men for the same price, but have to charge men more to help pay for the girls.

Duck Mill.—Forty boarders. For married persons only. Price paid: men, \$3.75; women, \$2.75. Breakfast: two

kinds of meat, tea and coffee, hot biscuit, bread, butter, pie and cake. Dinner: hot and cold meat, potatoes and other vegetables, pie and pudding, bread, butter and tea. Supper: same as breakfast. Women do their own extra washing.

Everett.—Forty-eight boarders, single and married. Men, \$3.75; women, \$2.50 per week, including ordinary washing. Breakfast: hot biscuit, butter, two days per week cold meat and potatoes, three days per week either meat or fish-hash, pie, tea and coffee. Dinner: meat, potatoes and other vegetables, when in season, pie or pudding, bread, butter and tea. Supper: bread, butter, cake, doughnuts or pie, and tea.

Pacific.—One hundred and twenty-five boarders, two-thirds women; price paid for board: men \$4, women \$2.50; in the latter case it includes ordinary washing. Two persons to each room. A large sitting-room is supplied for the use of boarders, who live in their own rooms principally. Doors locked at ten each evening, but men allowed night-keys. Breakfast at six o'clock: hot biscuit, butter, meat, potatoes, pie, tea and coffee. Dinner at twelve: meat of some kind, potatoes, bread, pie, pudding and tea. Supper: tea, bread, butter, sauce, cake or doughnuts, and pie. Fridays, for dinner, have meat and fish; Saturday night and Sunday morning have baked beans, and on Sundays, oysters, when in season.

Pemberton.—Forty boarders, mostly married; price paid: men \$3.50, women \$2.75 per week. Women generally do their own washing. Breakfast: hot biscuit, bread, butter, cold meat, pie or cake, sauce, tea and coffee. Dinner: hot meat, cold meat, potatoes and other vegetables, pie or pudding, sauce, bread, butter and tea. Supper: bread, butter, sauce, cold meat, pie, cake and tea.

Washington.—One hundred boarders, men and women; price for board: men \$3.50, women \$2.50 per week, including ordinary washing. Breakfast: hot biscuit, butter, sometimes meat-hash, sometimes cold meat, pie or cake, sauce and tea. Dinner: meat and potatoes with pudding, bread, butter and tea. Supper, about the same as breakfast.

We next present a few points of information concerning food in other states of the Union, drawn from those authentic sources, the reports of English consuls there resident.

FOOD IN OTHER STATES OF THE UNION.

GEORGIA.—*Savannah*. For breakfast, tea or coffee, hominy and molasses, or butter, and bread; for dinner, vegetables and meat, either salt or fresh, and bread, hominy or rice; for supper, the same materials as at breakfast.

MAINE AND NEW HAMPSHIRE.—Every variety of food is met with here, and in great abundance. Wheat flour is extensively used in varieties of pies, hot cakes and biscuits; so much so, that the majority of the inhabitants is said to suffer from some form of dyspepsia, attributable, in a measure, to the inordinate use of saleratus, a carbonate of potash.

NEW YORK.—*Buffalo*. There is a variety of food, but of a very inferior quality, and very ill-cooked. The general poorness of the butcher's meat consumed in Buffalo, is probably due to the fact that the animals slaughtered are brought from a great distance, and are usually mere prairie cattle, not fattened expressly for market.

SOUTH CAROLINA.—The principal articles of food are rice, hominy (the flinty particles of the Indian corn when boiled), wheaten bread, and fresh and salted beef and pork. In the summer season a bountiful supply of fresh garden vegetables can be had, and in winter, potatoes are imported from the Northern States.

TEXAS.—*Galveston*. Pork, bacon, bread made from Indian corn, and potatoes. Flour, coffee, tea and sugar are enjoyed by those who can afford to purchase them.

As forming a most interesting fund of useful information, offering the means to every workingman of contrasting his situation, in this respect, with that of his fellow-laborers in many foreign countries, we insert the following carefully-collated data, illustrating the point of food-consumption in Europe, Asia, South America, etc.

FOOD IN FOREIGN COUNTRIES.

AUSTRIA.—*Ragusa*. Breakfast of lemonade and dry toast ; copious dinner at 2 P. M., with wine of the country, largely mingled with water ; burnt barley, as coffee, after dinner ; no tea or supper, and no tea, coffee, or spirits taken on any occasion.

BELGIUM.—*Antwerp*. Meat, fish and vegetables of all kinds are abundant. The Belgian artisan lives chiefly upon farinaceous or vegetable food, but this proceeds from necessity, or a desire to economize, and not from preference or hygienic considerations. The beverage consists chiefly of coffee mixed with chicory, often of defective quality. Tea is seldom drank ; sugar is rarely seen, and milk is a luxury, afforded by only the better class of workmen. White bread is used by the upper working classes, but the common bread, mixed with rye, is principally consumed by the poorer workmen. *Namur and Liege* : Their food consists of white bread, coffee adulterated with chicory, milk twice a day, butter, cheese, potatoes, other vegetables, bacon and salt pork, and butcher's meat once or twice a week. *Colliers* : The food of workmen is white bread, butter, white cheese, bacon, potatoes, other vegetables, fresh meat once or twice a week, coffee mixed with chicory twice a day.

BRAZIL.—*Para*. The native workman requires few luxuries. His meals are often brought and eaten near the site of his work, and consist generally of dried or salted fish, or meat with farinha (flour of the mandioca-root), a cup of coffee and a drink of cachaca. *Rio Grande do Sul* : As regards food, beef, mutton, pork and poultry are of inferior quality ; fish, bad ; vegetables of average quality : bread not very good. Nearly all other articles of food are imported from Europe or the United States. *Sao Paulo* : The food is coarse, consisting chiefly of " feijás," a species of black bean, which, in the interior, they cultivate for themselves, and pork or beef, with " farinha," a meal made from the root of the mandioca, and eaten raw with their food. Out of the towns, beef is rarely to be obtained, and its deficiency is supplied by the " carne secca," or dried beef, which is stewed with the beans. Fowls, too, form a great part of their diet. The beverages are coffee, and water mixed with " cachaca," a spirit distilled from the sugar-cane.

COLOMBIA.—*Panama*. Meat, bread, butter, rice, potatoes, salt, " chicha," the native beer, and sugar, form the principal diet of this region. The Indian peasant lives entirely on coarse bread and chicha.

DENMARK.—*St. Croix*. Indian bread, and fresh vegetables, meat and fish form the principal diet here.

ENGLAND.—*Birmingham*. Vegetables are but little used by workingmen, being high. For breakfast, bread, bacon, tea or coffee; for dinner, bacon usually, fresh meats being dear. Cheese is much used. *Halifax*: For breakfast, tea, bread and butter or bacon; for dinner, a chop, with bread or potatoes, sometimes a pudding, tea, with bread, etc. *Sheffield*: Most workingmen have bread and bacon or butter, with tea or coffee, for breakfast; fresh meat of some kind, or bacon, with bread or vegetables, for dinner; light suppers, chiefly of bread.

EGYPT.—*Alexandria*. The artisans here, as a rule, observe nearly the same diet as in England, but less richly cooked, and less in amount, especially of animal food. The peasantry live principally upon vegetables, oil and fruit, with very coarse and extremely bad bread.

FRANCE.—*Charente*. The chief article of food is bread. Vegetables, cabbage, kidney beans (dry and green), potatoes, artichokes, radishes, lettuce, salads, cauliflower and asparagus are also used. Soup, daily, of fatty bones and vegetables, with thick admixture of bread. Beef and mutton, roast, occasionally; the beverage is coffee. *Cherbourg*: Soup, made of beef suet, boiled down with vegetables and bread; meat seldom ate. In the country, soup made of pig's lard instead of suet, and a porridge of buckwheat, butter and sour milk, is a favorite meal. The common beverage is cider. *Lyons*: Workmen live principally on soup, cooked with vegetables, meat, bread and light red wine. The latter article is used by everybody, and by both sexes, and forms an essential portion of the daily food. Coffee is comparatively neglected and replaced by a black and very substantial broth. Tea is used only in sickness. *Réunion*: Food consists principally of rice, salt fish and vegetables; occasionally poultry and pork. Mutton and beef are quite beyond the reach of the laboring classes. The beverages are coffee and the ordinary Bordeaux or Provence wines.

GERMANY.—*Hamburg*. The general standard of living is very low. Markets well supplied with food.

GREECE.—*Syra*. Bread, cheese, salt fish, fruit, etc. Very little meat is consumed by the laboring classes. Bread is not so good as it should be; flour from damaged wheat is too often mixed with good. Butter is rare and expensive, oil being chiefly used by the natives.

ITALY.—*Florence*. Diet consists principally of bread, soup, sausage, bacon, rice, beans, macaroni, potatoes; and for drink, black

coffee. *Milan*: Diet consists of macaroni, vegetables, or pulse and fish. Meat twice a week. *Piedmont* and *Lombardy*: The workmen here are contented with polenta for breakfast and supper, a portion of cheese, and occasionally a "minestra" or (lard) soup. *Rome*: The lower classes live principally on bread, macaroni and farinaceous food. The middle classes consume a great amount of pork, although it is considered injurious to health. *Naples*: The laboring classes here eat very little animal food, living principally upon macaroni in various forms, bread, fruit and vegetables. *Venice*: Polenta, a sort of pudding or cake, made of Indian corn-flour mixed with water, is the principal and almost exclusive article of subsistence of the peasantry and laboring classes. It is eaten by them with a small quantity of fried fish, or with cheese or other accompaniment, if obtainable.

MOROCCO.—The living is most simple, consisting daily of two penny loaves of bread, and a small bowl of a kind of gruel made from millet. "Cuscusoo," the favorite and national dish, is made from the finest part of the wheat, barley or millet, and requires a large quantity of butter or milk, which renders it a more expensive dish, and therefore cannot form a part of their daily food. Those who can afford it, provide themselves every market-day, which happens twice a week, with either half a pound or less of meat, or some fish cooked in oil.

PERSIA.—*Bushire*. All classes of laborers live very much alike, in the most frugal manner. The ordinary articles of food obtainable here are wheat, rice, meat, fish, dates and "dholl." The meat is generally of an inferior quality, owing to scanty pasturage. Vegetables are not procurable, excepting during the rainy season, when radishes, carrots, onions, turnips, gourds and brijals can be obtained. Fish and dates form the staple articles of food for the native workman. *Tabreez*: The diet of the laboring classes is of the simplest description; bread, fruit and cheese form their usual repast.

PORTUGAL.—*Madeira*. The diet of the laborers here consists of boiled Indian corn-meal, pulse and succulent vegetables, and occasionally rice, all flavored with a little lard, a little bread, coarse fish, and an occasional use of animal flesh. *Oporto*: Wheat bread is rarely used in the houses of the working classes. The maize and rye loaf is heavy and close, but not unpalatable. Meat and bacon are used only in the form of broth made with the addition of one or more of the following ingredients: cabbages, rice, haricot

beans, gourds, turnips or onions. This broth (oftener made without meat than with it) is the staple of the dinner of nearly all the workingmen. Salt codfish, pickled sardines, and dried cuttle-fish, are also parts of their diet. *The Azores*: The ordinary food of the industrial classes consists of Indian corn-bread, fish, yams, pepper-pods, or, in the summer season, cucumbers, water-melons and other fruit and vegetables. Meat is rarely eaten by the poorer classes.

RUSSIA.—*Kertch*. Meat is high; bread and poultry alone are cheap. *Nicolaieff*: The workmen are boarded on cabbage soup, millet and rye-bread. Men with families are obliged, in October, to lay in a stock of provisions to last five months, as, owing to the severity of the weather, bazaars can only be held occasionally. The workmen find it most onerous to advance the money for so large a supply of provisions and fuel, which with house rent (always required in advance) calls for a considerable outlay. *Odessa*: Provisions of most kinds are abundant and good. *Riga*: Food of all kinds can be procured, but, with the exception of bread and game, everything is of an inferior quality. Rye-bread is commonly used by all the lower classes. *Poland*: Black bread, sour and cabbage soups and pickled vegetables. The latter are necessary to counteract a tendency to scrofula. *Taganrog*: The laborers here are contented with rye-bread, a little salt and an onion, or piece of lard, for breakfast. For dinner a description of sour soup called "boarsh" (made with cabbage, beetroot, or herbs, boiled together with a piece of meat, lard or fish), and a preparation of boiled buckwheat or millet grits, with melted fat or hempseed oil, poured over the mess, and rye-bread, *ad libitum*. The supper is a repetition of the dinner. Water is the usual beverage.

SAXE-COBURG.—Bread and potatoes, of which they also make a porridge, form the chief nourishment of the working classes. They never eat meat unless they can afford to keep a pig, and a little bacon is then sometimes eaten. Many tradespeople, even clerks in public offices, cannot afford to eat it, except, perhaps, on Sunday.

SAXONY.—*Leipzig*. The diet consists chiefly of rye-bread, butter, bacon-fat, pork, sausage, beef, and veal, potatoes, cabbage in great variety, dumplings and soups.

SPAIN.—*Alicante*. The food of the industrial classes consists principally of bread, pulse, greens, salt fish, fruit and wine. Very seldom, butcher's meat. *Balearic Isles*: Same as in Alicante. *Porto Rico*: Salt fish, dried beef, plantains, rice, Catalan oil and

garlic; water generally, rum exceptionally. *Valencia*: Breakfast, dried codfish, pilchards, capsicum, bread, fruit and wine. Dinner, a stew of codfish, or a thick soup of rice with parsnips or beans; bread, fruit and wine. Supper same as the dinner.

SWEDEN.—*Stockholm*. There is scarcely any adulterated food used in Sweden. The diet of the working classes consists of meat (beef and pork), rye flour baked into hard cakes, soup made from vegetables and meat, eggs and milk. These provisions are plentiful and cheap. *Gottenburg*: The food of the workingmen in and about Gottenburg, though perhaps sufficient in quantity, is not of so nutritious a quality as could be desired. The bread is almost invariably of rye, baked in thin, hard cakes. Wheaten bread is seldom used, and then only as a treat. Milk, butter and cheese are used, but sparingly. Potatoes, porridge of oat or barley meal, or grits, with salt herrings, dried pork or bacon, and vegetables, especially cabbages and Swedish turnips, form the principal basis of their diet. Fresh meat is seldom seen on their tables. Fresh fish, especially haddock, codfish, large flounders and mackerel, are used when the prices are low. Tea is never used, but a great deal of coffee, which seems to be their principal article of luxury.

SWITZERLAND.—Food consists principally of bread of very fair quality, cheese, potatoes, vegetables and fruit. Workmen seldom eat meat above once a week, and even then in very small quantities. They consume large quantities of milk. All classes alike live very frugally, and confine themselves principally to a vegetable diet; the fare of the middle classes being frequently very much the same as that of the lower. They all drink coffee at least twice a day, the proportion of chicory mixed up with it being very large and not objected to.

TRIPOLI.—The food of the laboring classes is simple in the extreme. It consists chiefly of fruit, a little roasted barley-meal, bread and oil. In the summer green fruits are eaten, and in the winter dried dates and buttermilk form almost their sole food. Meat and eggs, and even oil and bread, are luxuries which they do not very often enjoy.

TURKEY.—*Anatolia*. The peasant's food is mostly vegetable, and in great measure the produce of his own ground. Maize bread in the littoral districts; and brown bread, in which rye and barley are largely mixed, for the inland provinces, form nine-tenths of a coarse but not unwholesome diet. This is varied occasionally with milk.

curds, cheese and eggs; the more so if the household happens to possess a cow and barn-door fowls. Dried meat or fish are rare but highly esteemed luxuries. Water is the only drink. *Bagdad*: The native laborers live almost entirely on bread and dates, with fruit in its season; water-melons are a staple of their food in summer. Bread and meat (both of an inferior quality), fish, vegetables and fruits, according to season, are plentiful. *Beyrout*: Animal food, rice, vegetables and fruit form the principal diet. The beverages are wine, beer and coffee. *Epirus*: Bread is the staple of the workmen's diet; it is of wheaten seconds, and though somewhat dark-colored, it is well-tasted, sound and wholesome. Rice forms part of almost every meal. All, even the poorest, begin the day with a "finjan" of strong black coffee without sugar. This is the luxury of workmen—they are continually sipping it in small quantities; ten or a dozen finjans a day is no unusual allowance, the finjan holding about as much as an egg-cup. They also use some cheese, olives, or strong-tasting vegetables, such as onions, leeks and garlic. *Koordistan*: The staple food of the industrial classes is bread, bruised hulled wheat boiled into a "pilaf," with butter, and the different preparations made from milk. Their only esculent vegetables are onions, sometimes a few cucumbers or melons. Quite often the housewife manages to keep a few fowls, affording them eggs, which, with the produce of the cow or goats, vary the monotony of their food. They only eat twice a day. They never touch meat except when one of their animals dies from accident, old age, or *sickness*; then the meat is divided among the villagers and paid for in grain. *Monastir*: The diet is very simple. It consists chiefly of bread made from Indian corn mixed with rye, and is of a good quality. Pepper in the pod, leeks and garlic they eat in great quantities. Salt fish sometimes, and meat very seldom. *Rhodes*: The food that can be procured is limited to the first necessities of life, but they are wholesome. *Scutari*: The principal bread made here is from coarse Indian corn-meal, without salt, and so heavy that none except the Scutarines, who are used to it from their infancy, can eat it with impunity. Wheaten bread is made, but in a far less quantity. The meat sold here is generally very inferior, and chiefly mutton and goat. Beef is also met with. The vegetables are cabbages, onions, leeks, gourds, cucumbers, tomatoes and kidney-beans, all, for want of proper cultivation, very inferior. The fruits are melons, water-melons, grapes, figs, walnuts and chestnuts. *Servia*: Common vegetables and fruit are cheap and plentiful in summer; in winter, potatoes and cabbages only are procurable. The latter is made, after the German fashion, into "sauer kraut." *Smyrna*: The food

of the peasantry consists of coarse bread, various preparations of wheat and barley, maize, vetches, beans, onions, and a few other vegetables, olives, milk, eggs, and occasionally rice, also fruit and coffee; but meat is a luxury of which they partake very rarely.

URUGUAY.—*Monte Video*. Meat and vegetables as food, common Spanish wine as a beverage, form the customary aliment of the working class; groceries, in general, extravagantly dear; farinaceous food and vegetables likewise costly.

VENEZUELA.—The diet consists principally of beef and poultry, wheat and maize bread, and a common substitute for it denominated "casave," made of the "yuca" root; rice, beans, potatoes, as well as bananas and other tropical fruits.

Without more illustration or argument, we deem that it is fairly inferable that the following statements are facts:—

SUMMARY OF RESULTS.

First. That the working classes of Massachusetts, judging from our investigations, are well fed.

Second. That their food in variety and quality is above the average of that consumed in foreign countries, and that, as regards quantity of animal food used, their "higher level" is unquestionable.

CHAPTER VIII.

BOOTS AND SHOES. — DRY GOODS. — CLOTHING.

The classes of expenditure dealt with in this chapter are those of universal necessity; yet, in making purchases to supply them, the buyer, more than in any other detail of cost of living, is a free agent. According to his means, he may choose the best fabrics, the finest styles, the first grade of workmanship; or he may take the strong and durable cloths, the last season's pattern and second-quality work. To be well dressed, one must be appropriately dressed. We have combined in the succeeding table the averages for boots and

shoes, dry goods (partly used for housekeeping purposes) and clothing. The average size of family, given therewith, aids in the interpretation.

TABLE I.—*Yearly Average Expenditures for Boots and Shoes, Dry Goods and Clothing.*

CLASSIFICATION.	No. of Families.	Size of Families.	YEARLY AVERAGES.		
			Boots and Shoes.	Dry Goods.	Clothing.
OCCUPATIONS.					
Building trades, <i>sk.</i> , .	57	4.46	\$25 74	\$23 88	\$65 05
Boots, shoes and leather, <i>sk.</i> , .	39	4.77	15 65	20 96	60 84
Metal workers, <i>sk.</i> , .	61	4.54	26 99	25 35	73 48
“ “ “ “ “ <i>unsk.</i> , .	17	5.59	19 88	19 84	45 92
Mill operatives, <i>sk.</i> , .	35	4.97	27 21	24 41	73 00
“ “ “ “ “ <i>unsk.</i> , .	42	5.88	20 40	17 56	47 22
“ “ “ “ “ <i>overseers</i> , .	4	5.25	46 80	25 20	145 25
Outdoor employments, <i>unsk.</i> , .	108	5.66	21 95	17 66	47 26
Shop trades, <i>sk.</i> , .	24	4.88	29 62	25 25	72 58
“ “ “ “ “ <i>unsk.</i> , .	10	5.90	17 98	16 40	34 98
Totals,	397	5.14	\$23 47	\$21 22	\$59 59
KIND OF LABOR.					
Skilled,	216	4.67	\$24 94	\$24 01	\$68 80
Unskilled,	177	5.72	21 16	17 73	46 43
Overseers,	4	5.25	46 80	25 20	145 25
Totals,	397	5.14	\$23 47	\$21 22	\$59 59

Considering the averages for boots and shoes, we find overseers spend by far the most, the skilled shop trades coming next, while those engaged in the manufacture of the articles themselves, pay the least. This is accounted for by the fact that, in many cases, boot and shoe makers purchase the stock, and either make it up for their own families, or have it done by their brother workmen. There is but a small variance between the expenditures of the skilled and unskilled, as classes.

As regards dry goods, the occupation presentation is not very significatory; but we find the skilled workers' average comes nearly to that of overseers,—the latter leading slightly in outlay.

Clothing develops a state of great disproportion, confirmatory of the introductory remarks in this chapter.

While the overseer spends \$145, the unskilled laborer in shops uses but \$34.98. The metal workers, mill operatives and shop workmen, all skilled, dress well, judging by outlay; the skilled workingmen, by the same standard, are finer, if not better, clothed than the unskilled.

No better examples of thrift and personal comfort—even if the latter is of a frugal nature—are to be found in Europe than among the industrial classes of the republic of Switzerland. Among no other people is there more social intercourse between employers and employes, and it can be easily imagined that the latter would aim to make a presentable appearance,—much more so than they would naturally if their social powers were less cultivated and developed.

For the reasons given, we have deemed a comparison between the dress of Swiss workingmen and that of our own would be an impartial one, and we accordingly subjoin three statements, so arranged as to render comparison easy, and to enable the reader to form an opinion as to the status of the respective industrial classes in this respect.

TABLE II.—*Comparative Showing of the Style of Dress of American and Swiss Workingmen.*

Clothing required by an American Workingman.	Clothing required by a Swiss Workingman.
1 suit of clothes, ready made, woollen and cotton.	Coat, lasts three years.
1 suit of clothes, ready made, for Sunday, all wool, lasts two years, and then taken for a working suit.	Waistcoat, lasts one year.
Undershirt and drawers.	Trowsers.
Overalls and overshirts.	Trowsers, for summer, lasts one year.
3 shirts made at home, cotton, with linen bosoms.	Under-waistcoat, lasts two years.
3 pairs woollen stockings.	Jacket, lasts two years.
1 pair, ready made boots, twice mended.	2 shirts per year.
1 pair, ready made boots, cheaper quality, twice mended.	1 pair braces, lasts one year.
Neckties.	Woollen stockings, last one year.
Pocket handkerchiefs.	Cotton stockings, last one year.
1 woollen hat.	Boots, resoled twice, last one year.
Suspenders.	Shoes, resoled four times, last one year.
	Necktie, lasts one year.
	2 pocket handkerchiefs per year.
	1 felt hat, lasts three years.

The essential parts of a man's costume seem to be well represented, and there is no material difference between the nationalities as to variety and quantity, however much there may be in cut or finish. The length of time that the articles are used, the double service which they perform for Sunday and week-day wear, and the mending of boots and shoes, are by no means indicative, in either case, of a spirit of extravagance or an adherence to the demands of fashion.

We next present a similar opportunity for comparison to that afforded in Table II., but this time having reference to the dress of working-women.

TABLE III.—*Comparative Showing of the Style of Dress of American and Swiss Working-women.*

Clothing required by an American Working-woman.	Clothing required by a Swiss Working-woman.
2 dresses and making, for Sundays, last two years 3 calico dresses, made at home. 1 petticoat, felt, worn two years. 2 petticoats, flannel, worn three years. 2 petticoats, white cotton, worn three years. 20 yards cotton cloth and trimmings for chemises. 2 pairs corsets. 2 under-flannels. 3 pairs cotton stockings. 2 pairs woollen stockings. 12 yards of print for aprons. 2 pairs boots, with mending. Collars, cuffs, scarfs, ribbons, etc. Shawl, worn three years. Pocket handkerchiefs, 4 per year. 1 hat, lasts two years. 1 bonnet, lasts two years. Gloves, 1 pair.	Dress, usually worn three years. Petticoat, usually worn two years. Chemises, 2 per year. 2 pairs corsets. Under-waistcoat, usually worn 1 year. Under-clothing, usually worn 1 year. 2 pairs cotton stockings. 2 pairs woollen stockings. 2 aprons per year. Shoes, resoled twice per year. Shoes, resoled six times per year. Neckerchief, lasts one year. Comb, lasts one year. Jacket, worn two years. Shawl, worn ten years. Pocket handkerchiefs, 2 per year. 1 bonnet, lasts 4 years. Hood, lasts 2 years. 1 pair gloves, lasts 2 years.

The remarks which follow Table II., may, with but few modifications, be applied to the one just preceding. The longevity which a shawl can attain in Switzerland or the number of times that shoes will stand resoling there, may not find an exact parallel in this state; but, generally speaking, the statements are indicative of plenty, uncoupled with lavishness.

A similar exhibit to those preceding we make, finally, con-

cerning the clothing of male working-children under fifteen years of age. In the case of girl workers, at fifteen, their dress is similar and but little less expensive (unless "cut over" to fit them) than that of working-women. The cutting-over process, in the case of boys' clothing, is not so common or profitable.

TABLE IV.—*Comparative Showing of the Style of Dress of American and Swiss male Working-children under 15 years of age.*

Clothing required by male American Working-children under 15 years of age.	Clothing required by male Swiss Working-children under 15 years of age.
1 suit of clothes, all wool, ready made. 1 jacket, 1 vest and 3 pairs of pantaloons, made at home. 2 cotton shirts, last one season. 2 woollen shirts, last two years. 3 pairs cotton stockings. 2 pairs woollen stockings. 1 pair boots, lasts two years with mending. 2 pairs shoes, with mending. Necktie and collars. 2 hats. 2 pocket handkerchiefs. Suspenders.	1 coat, cotton warp, lined, per annum. Waistcoat, cotton warp, lined; one, usually, per annum. 3 pairs trowsers, cotton warp, lined, per annum. 2 cotton shirts per annum. 2 pairs woollen stockings. 2 pairs cotton stockings. 1 pair shoes, resoled twice, per annum. Necktie. Woollen cap. 2 pocket handkerchiefs. Braces.

The comments made in the cases of working men and women are, comparatively, applicable as regards the clothing of working-children.

The statements contained in the individual presentations in Chap. III., relating to the dress of each family, when taken in connection with the comparisons instituted in this chapter, and also with the tabular averages, abundantly confirm the predication of the truth of the following—

SUMMARY OF RESULTS.

First. That, as far as our investigation extended, our workmen are, on the average, well and comfortably clothed.

Second. That their manner of dress is, at least, capable of most favorable comparison with that in foreign countries.

Third. That, judging from the proportionate outlay for

dress, as regards entire expenses, there is no evidence that our workingmen, in obedience to fashion, indulge in an excessive or disproportionate expenditure.

CHAPTER IX.

SUNDRY EXPENSES.

At this point, we may consider that we have quite thoroughly considered, in preceding chapters, the principal of a workingman's items of expenditure. The house for shelter, the fuel for warmth and the preparation of food, the food itself for sustenance, the articles for the clothing of the body, —all these we have seen, in a greater or less degree, are provided for. Yet there still remains a class of expenses which, although, as we have said, not absolutely necessary for the life of the body, are, in their way, an imperative necessity in a man's social life. Such expenses are comprehended by the, in itself, inexpressive word, "sundries." Whether the sum thus expended is large or small, the object in view, with the poor as well as the rich, is the same. Literature, music, art, the drama, and the pursuit of other pleasures or means of improvement of mind and body, absorb the rich man's "sundry" money; the poorer man also desires his books and papers, a piano and music for his children, pictures for his walls, lecture and theatre tickets, his society, his pew in church, the means to remember, appropriately the ever-recurring birth-days and Christmas,—in fact, there are numberless requirements for adding to the comfort, cheerfulness and beauty of home and the personal and social happiness of its occupants.

We will consider, primarily, the average outlay for sundries by the families, without, at present, any specification of the purposes for which expended.

TABLE I.—*Yearly Average of Sundry Expenses.*

CLASSIFICATION.	No. of Families expending for sundries.	Amount Ex- pended.	Averaged yearly Expense.
OCCUPATIONS.			
Building trades, <i>sk.</i> ,	57	\$3,174 38	\$55 69
Boots, shoes and leather, . . . <i>sk.</i> ,	39	1,735 88	44 51
Metal workers, <i>sk.</i> ,	61	3,602 07	59 05
“ “ <i>unsk.</i> ,	17	673 05	39 59
Mill operatives, <i>sk.</i> ,	35	2,151 42	61 47
“ “ <i>unsk.</i> ,	42	1,541 69	36 71
“ “ <i>overseers</i> ,	4	568 58	142 15
Outdoor employments, <i>unsk.</i> ,	108	3,136 71	29 04
Shop trades, <i>sk.</i> ,	24	1,371 24	57 14
“ “ <i>unsk.</i> ,	10	263 85	26 39
Totals,	397	\$13,218 87	\$45 89
KIND OF LABOR.			
Skilled,	216	\$12,034 99	\$55 72
Unskilled,	177	5,615 30	31 72
Overseers,	4	568 58	142 15
Totals,	397	\$13,218 87	\$45 89

The universality of sundry expenses could receive no more forcible exposition than the fact that, of the families visited, all had expenditures of the nature considered. The overseers have the largest annual outlay, the skilled mill operatives coming next, but yet far behind. The unskilled outdoor employments and shop trades expended the least. The average of the skilled, as a class, far surpasses that of the unskilled. The general average is \$45.89, while the total amount expended forms 6+ per cent of the entire cost of living.

There is a sanctity to every household which even the state should not invade, unless required by the greatest good of the greatest number. For the reason given above, in the following table but about one-third of the entire sundry expense is specifically accounted for. We know not how much was thrown away from bad habits, or how much was squandered in extravagance; the amount unaccounted for, about \$12,000, even if all expended for non-legitimate purposes, which is a highly improbable and untenable assumption, forms but 4+ per cent of the cost of living, and seems plainly

indicatory that, with the most unfavorable construction that can be placed upon it, among the families considered, expenses on account of bad habits or its twin evil of extravagance were kept at a very modest and creditable minimum. We have no right to assume but that the majority of the \$12,000 was expended as legitimately as was the \$6,000 for the items specified in Table II.

TABLE II.—*Average yearly outlay for certain specified "Sundries."*

CLASSIFICATION.	No. of Families.	No. Ex- pending money for.	Amount Expended.	Average yearly Expenditures.
Furniture and carpets, . . .	397	5	\$321 00	\$64 20
Books and papers, . . .	"	264	2,374 13	8 99
Societies, . . .	"	135	1,161 52	8 60
Religion, . . .	"	133	1,942 00	14 60
Charity, . . .	"	4	70 00	17 50
Sickness, . . .	"	2	57 75	28 88
Care of parents, . . .	"	1	60 00	60 00
Care of house, . . .	"	1	33 00	33 00
Recreation, . . .	"	1	36 00	36 00
House-girl, . . .	"	1	182 00	182 00
Travel to work, . . .	"	2	28 00	14 00
Life insurance, . . .	"	1	18 00	18 00

From the above, much interesting information can be extracted. But five families out of 397 invested in furniture and carpets; 264 families, or 66+ per cent of the whole number, expended an average of \$9 yearly for books and newspapers; 34 per cent paid society dues, and the same percentage devoted money to religion. Charity, sickness (but two instances), recreation, life insurance (but one instance), etc., are represented in the tables by totals and averages.

As an indication of what sundry money has been expended for in past years, we give a closing table of a miscellaneous nature:—

TABLE III.—*Sundry Expenditures in past Years.*

CLASSIFICATION.	No. of Families.	NUMBER OF FAMILIES HAVING—				
		Pianos or organs.	Sewing machines.	Carpeted rooms.	Pews in church.	
OCCUPATIONS.						
Building trades,	sk.,	57	14	36	52	32
Boots, shoes and leather,	sk.,	39	4	17	28	13
Metal workers,	sk.,	61	18	39	49	27
“ “ “ “ “	unsk.,	17	—	—	3	1
Mill operatives,	sk.,	35	1	9	17	8
“ “ “ “ “	unsk.,	42	—	—	4	3
“ “ “ “ “	overseers,	4	2	4	4	4
Outdoor employments,	unsk.,	108	2	14	26	6
Shop trades,	sk.,	24	4	17	23	11
“ “ “ “ “	unsk.,	10	—	—	1	1
Totals,		397	45	136	207	106
KIND OF LABOR.						
Skilled,		216	41	118	169	91
Unskilled,		177	2	14	34	11
Overseers,		4	2	4	4	4
Totals,		397	45	136	207	106

Of the 397 families, 11+ per cent have pianos or cabinet organs; 34+ per cent have sewing-machines, and, in addition to this labor-saving article, many possessed wringing machines, as will be found by reference to the family statements; 52+ per cent had one or more carpeted rooms, in many instances, as stated in the individual presentations, the entire tenement of five or six apartments being carpeted; 26+ per cent paid rates for church pews. These evidences of material prosperity, it will be noted, are largely shown by the skilled class, the unskilled making a comparatively poor exhibit.

From a comprehension of the information contained in the individual family statements in chapter III., and of the points demonstrated by the tables in this chapter, we feel sustained in framing the subjoined—

SUMMARY OF RESULTS.

First. That, from our investigations, we find no evidence or indication that workingmen spend large sums of money extravagantly, or for bad habits.

Second. That a large proportion of skilled workmen have sewing and other labor-saving machines in use in their families.

Third. That, as evidences of material prosperity to a certain extent, significant numbers of the families (the aid of child labor being fully allowed) own pianos or cabinet organs, have carpeted rooms and maintain pews in church.

CHAPTER X.

GENERAL SUMMARY.

The statistician and the social economist are indebted to Dr. Engel, the present head of the Statistical Bureau at Berlin, Prussia, for collecting, tabulating and working up with acknowledged power of analysis, the whole of the statistical matter, new and old, obtainable by him in his country, bearing upon the question of cost of living, and for having ascertained, partly by induction and partly by theorizing, what the general law is, by which the expenditure necessary to satisfy the several requirements of life is governed in different sections of the community,—at least of that portion of it which is in comparatively easy circumstances, or above the reach of want.

Subjoined, we give a comparative statement, prepared by Dr. Engel, which shows the average relative percentage, in Prussia, of the various items of expenditure of families belonging to three different classes of the population; viz., of the family of what is considered in that country, a tolerably well-to-do member of the working class, of a man whose income is double that of the former, and lastly, of a person in easy circumstances.

Engel's Table.

ITEMS OF EXPENDITURE.	PERCENTAGE OF THE EXPENDITURE OF THE FAMILY OF—		
	A Workingman with an Income of from \$225 to \$300 a year.	A man of the intermediate class ("Mittelstandes") with an Income of from \$450 to \$600 a year.	Of a person in easy circumstances ("des Wohlstandes") with an Income of from \$750 to \$1,100 a year.
	Per cent.	Per cent.	Per cent.
1. Subsistence,	62.0	55.0	50.0
2. Clothing,	16.0	18.0	18.0
3. Lodging,	12.0	12.0	12.0
4. Firing and lighting,	5.0	5.0	5.0
5. Education, pub. worship, etc.,	2.0	3.5	5.5
6. Legal protection,	1.0	2.0	3.0
7. Care of health,	1.0	2.0	3.0
8. Comfort, mental and bodily recreation,	1.0	1.5	3.5
Total,	100.0	100.0	100.0

The foregoing table demonstrates the points upon the strength of which Dr. Engel propounds an economic law.

The distinct propositions are,—

First. That the greater the income, the smaller the relative percentage of outlay for subsistence.

Second. That the percentage of outlay for clothing is approximately the same, whatever the income.

Third. That the percentage of outlay for lodging, or rent, and for fuel and light, is invariably the same, whatever the income.

Fourth. That as the income increases in amount, the percentage of outlay for "sundries" becomes greater.

This doctrine of the average percentages of expenditure is confirmed by inquiries instituted by Ducpetiaux in Belgium, and by Le Play, in his account of the expenses of workingmen in France, and the German districts bordering upon it, in Switzerland and in Savoy. Inquiries made at Hamburg, though disagreeing with the percentage fixed for rents, did not invalidate the general principles laid down by Dr. Engel.

The latter explains that his theory is based on averages and must be compared with averages, and not with individual statements, in the case of which latter many local or temporary influences necessarily affect the percentages.

We deemed that our returns, by their large number, admitting of truly representative averages, furnished the data for an instructive and valuable comparison with the law we have explained, and we accordingly present three tables, founded on important sub-divisions, in order to demonstrate in how great a degree the principles of the law are verified or disproved by the averages of workingmen in this state.

TABLE I.—*Percentages of Expenditure as regards Fathers "alone" and "assisted."*

ITEMS OF EXPENDITURE.	PERCENTAGE OF THE EXPENDITURE OF THE FAMILY OF A WORKING- MAN—	
	Relying upon his individual earnings alone.	Assisted by the labor of wife or children.
	Per cent.	Per cent.
1. Subsistence,	54	59
2. Clothing,	14	14
3. Rent,	18	15
4. Fuel,	6	6
5. Sundry expenses,	7	6
Totals,	100	100

By reference to the tables in Chapter IV., we ascertain that of the 142 families, in which the father was the only worker, the average income was \$723.82. Of the 255 families, in which the wives or children assisted, the average income was \$784.38. According to this state of affairs, the assisted families, to conform to the law, should have expended *less* for subsistence and *more* for sundries than those relying on the father alone, with his smaller income. But we see in Table I. that the reverse is the fact, by a variation of .5 per cent in one point of comparison, and 1 per cent in the other. The proposition of the law as regards percentage of outlay

for clothing is sustained; again, the law is verified as regards fuel, but disproved as far as it relates to rent or lodging.

Our next comparison is between the "law" and the percentages of expenditure of skilled and unskilled workmen.

TABLE II.—*Percentages of Expenditure as regards Skilled and Unskilled Labor.*

ITEMS OF EXPENDITURE.	PERCENTAGE OF THE EXPENDITURE OF THE FAMILY OF A WORKING- MAN—	
	Engaged in Skilled Labor.	Engaged in Unskilled Labor.
	Per cent.	Per cent.
1. Subsistence,	54.5	58
2. Clothing,	15	14
3. Rent,	17.5	16
4. Fuel,	6	6
5. Sundry expenses,	7	6
	93	94
Totals,	100	100

Referring once more to the tables of Chapter IV., we find that the average income of the families of skilled laborers (including overseers) was \$823.60, while of unskilled laborers' families, \$687.05 formed the average income. To verify the law, in these instances, the skilled should have expended a less percentage for subsistence and a greater one for sundries than the unskilled; and such is the fact. The law is again correct as regards clothing and fuel, but fails somewhat of verification in the case of rent.

As an important item of statistical information, it may be stated here, that of the total expenditure of the 397 families, 58 per cent was required for subsistence, 14 per cent for clothing, 16 per cent for rent, 6 per cent for fuel, and the balance of 6 per cent was devoted to sundry expenses.

Considering that Dr. Engel's table is graduated according to incomes rather than conditions, it might be urged that a more perfect comparison could be made if the incomes of the 397 families were similarly graded and percentages struck. Acknowledging the truth of this, we have performed the work, and present the results in the following table:—

TABLE III.—Percentages of Expenditure as regards Income.

ITEMS OF EXPENDITURE.	PERCENTAGE OF THE EXPENDITURE OF THE FAMILY OF A WORKINGMAN WITH AN INCOME—				
	From \$300 to \$450.	From \$450 to \$600.	From \$600 to \$750.	From \$750 to \$1200.	Above \$1200
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
1. Subsistence, . . .	64	63	60	56	51
2. Clothing, . . .	7	10.5	14	15	19
3. Rent, . . .	20	15.5	14	17	15
4. Fuel, . . .	6	6	6	6	5
5. Sundry expenses, . .	3 3	5 5	6 6	6 6	10 10
Totals, . . .	100	100	100	100	100

We find that, in direct accordance with the law, the greater the income the smaller the relative percentage of outlay for subsistence; and also, still in accordance, that as the income increases, the percentage of outlay for sundries becomes greater. As regards fuel, the law is quite generally verified; but its propositions as regards clothing and rents are plainly disproved.

Considering, in a general way, the maximum and minimum percentages for the different items of expenditure, as shown in Table III. and in Engel's table, we find that all grades of incomes in Massachusetts pay a *larger* percentage for subsistence than do similar grades of incomes in Prussia. As regards clothing, the percentage is *less* here than in Prussia, still bearing incomes in mind. For rents, the percentages, as regards incomes, are much *greater* here than in Prussia. For fuel, also, the percentages here show a slight *excess* above those in Prussia. Finally, considering sundry expenses, we find the percentages here *less* than in Prussia, in each grade of income.

The points made apparent by the discussion and comparisons incident to Dr. Engel's theory, may be embodied in the form of a—

SUMMARY OF RESULTS.

First. That as regards subsistence, rents and fuel, the workingmen's families which we visited paid therefor larger

percentages of their income than do workingmen's families, with like incomes, in Prussia and other European countries.

Second. That as regards clothing and sundry expenses, our workingmen's families paid therefor smaller percentages of their income than do workingmen's families, with like incomes, in the countries mentioned above.

ANALYSIS OF PRECEDING SUMMARIES.

We now are in condition to make an analysis and concentration of the various summaries of results given in this and preceding chapters. For the sake of definiteness in presentation, and convenience of reference, in succeeding considerations, we place at the left the respective designations of "earnings," "expenses," "manner of living" and "savings," and at the right, in numerical order, the related results, drawn from our own investigations and the comparisons heretofore instituted with them.

Our conclusions are :—

First. That in the majority of cases, workingmen in this Commonwealth do not support their families by their individual earnings alone.

Second. That the amount of earnings contributed by wives, generally speaking, is so small, that they would
As regards Earnings: save more by staying at home than they gain by outside labor.

Third. That fathers rely, or are forced to depend, upon their children for from *one-quarter* to *one-third* of the entire family earnings.

Fourth. That children under fifteen years of age supply, by their labor, from *one-eighth* to *one-sixth* of the total family earnings.

First. That, judging from the proportionate outlay for dress, as regards entire expenses, there is no evidence that the workingmen we visited, in obedience to fashion, indulge in an excessive or disproportionate expenditure.

Second. That, from our investigations, we find no evidence, or indication, that workingmen spend large sums of money extravagantly or for bad habits.

Third. That, as regards subsistence,
As regards Expenses: rents and fuel, the workingmen's families which we visited paid therefor larger percentages of their income than do workingmen's families, with like incomes, in Prussia and other European countries.

Fourth. That, as regards clothing and sundry expenses, our workingmen's families paid therefor smaller percentages of their income than do workingmen's families, with like incomes, in the countries mentioned above.

First. That, among the families visited, those containing the greatest number of child workers occupy the most crowded rooms and the inferior class of tenements.

Second. That about three-quarters
As regards Manner of of the workingmen's homes which we
Living: visited are in good condition as regards locality and needful sanitary provisions; but,—

Third. That nearly one-half of the unskilled laborers live in the inferior tenements.

Fourth. That the working classes of Massachusetts, judging from our investigations, are well fed.

Fifth. That their food, in variety and quality, is above the average of that consumed in foreign countries, and that, as regards quantity of animal food used, their "higher level" is unquestionable.

Sixth. That, as far as our investigations extended, our workingmen are, on the average, well and comfortably clothed.

Seventh. That their manner of dress is, at least, capable of most favorable comparison with that in foreign countries.

As regards Manner of Living :
[Continued.]

Eighth. That a large proportion of the skilled workingmen visited have sewing and other labor-saving machines in use in their families.

Ninth. That, as evidences of material prosperity to a certain extent, significant numbers of the families (the aid of child labor being fully allowed), own pianos or cabinet-organs, have carpeted rooms, and maintain pews in church.

First. That more than *one-half* of the families visited save money; less than one-tenth are in debt; and the remainder make both ends meet.

As regards Savings : *Second.* That, without children's assistance, other things remaining equal, the majority of these families would be in poverty or debt.

Third. That savings, by families and fathers alone, are made in every branch of occupation investigated; but that in only a few cases is there evidence of the possibility of acquiring a competence, and, in those cases, it would be the result of assisted or family labor.

Fourth. That the higher the income, generally speaking, the greater
As regards Savings: the saving, actually and proportionately.

[Continued.]

Fifth. That the average saving is about *three per cent* of the earnings.

Sixth. That while the houses of the workingmen visited compare most favorably with those in foreign countries and other states of the Union, yet, in certain of the United States, workingmen have better opportunities for acquiring homes of their own.

The foregoing twenty-four results, based upon our investigations into the condition of three hundred and ninety-seven families of wage-laborers in this state, are, we believe, as we have previously stated, indicative and representative of the condition of the families of the mass of the actual wage laborers in the Commonwealth.

Believing this, and yet conceding fully the right of others to disbelieve, if they can overcome or explain away our weight of proof, our purpose is now to bring the results of the wage system in Massachusetts directly home to the system itself, and while we demonstrate the system's weaknesses, its failures and its crimes, we yet desire to show, how, within itself, it contains the means for righting some wrongs.

Let us revert, at first, to our assertion in the introduction to this part, that "it seems natural and just that a man's labor should be worth, and that his wages should be as much as, with economy and prudence, will comfortably maintain himself and family, enable him to educate his children, and

also to lay by enough for his decent support when his laboring powers have failed."

This is what the wage system should do. What does it do that seems "natural and just"? What does it fail to do? and What does it do that is weak and criminal?

1st. What does it do? It enables the workingman, in a minority of cases, to comfortably maintain himself and family by his individual earnings; again, it enables the workingman, in the majority of cases, by the aid of the labor of his wife and children, to do the same. In both instances, given above, it enables the father or family to keep some of the children at school.

2d. What does it fail to do? It fails to pay the father so much for his labor that he can in all cases support his family on his own earnings, educate all his children up to a proper age, buy a suitable home from his savings, or lay by enough for his decent support when his laboring powers have failed.

3d. What does it do that is weak and criminal? It uses men and women when they are strong, and leaves them to shift for themselves when they are sick, infirm or without employment. This it does by paying no more for labor than the bare cost of existence of the body. It usurps to its benefit the future productive power of the state, by employing children who should be in school or at play, setting at defiance the organic law of production by paying to 44 per cent of the individuals but 24 per cent in wage. It pays to 10 per cent of the workers such small wages that they are in debt and poverty, and it holds out to such unfortunates no promise or prospect of a bettering of condition, but allows them to become objects of commiseration, and to attribute their sufferings to the prevailing system of labor.

RECOMMENDATION.—CONCLUSION.

We have referred in several parts of the subject under consideration to the difference between *facts* and *figures*, meaning to convey the impression that the particular sum earned, expended or saved was not so indicative of a workingman's status as the facts concerning the condition of his family. In many of the individual returns, it will be noted

that some families mentioned as saving money are living in inferior tenements, upon cheap food, and are poorly clad. How, then, is a figure denoting a money-saving a sure index that the father or family are deriving the first fruits of labor, and are progressing in life?

The only *figure*, of this nature, which it is of value for statisticians or social economists to discover is the one which, with due regard to locality, customs of the people, and the financial state of the community, will plainly indicate the minimum cost of living of families of different sizes. We do not think that, after the results which we have given of the minuteness of our inquiries, any considerable number of persons will think that the families visited copied costly fashions or are liable to a general charge of unthrift. Such being the case, some points made manifest in Table XVIII. of Chap. IV., and not as yet specially referred to, seem worthy of a careful consideration.

The thirty-four families in debt (see Table XX., Chap. IV.), when dispersed in the income gradations (see Table XVIII., Chap. IV., previously referred to), render 58 families *apparently* in debt, but this is owing to the fact that the deficits of the 34 overcame the small surpluses of the other 24. The *actual debts* are given in Table XX. as heretofore shown. Having thus explained the table, our particular purpose is to call attention to the fact that incomes under \$600 in amount render debt a necessity, the deficit growing larger as the income decreases.

Much can be rightfully and truly said, as we have shown, against the prevailing wage system, but the iconoclasm that strives to break it down, unless at the same time it shows the superstructure of a more equitable and easily managed one, will be devoid of fruitful results or permanent benefit.

We have here, no plan to bring forward as a substitute for the wage system, but only a recommendation, which, if adopted, would reduce by one the list of its weak or criminal acts.

We believe that there should be a certain minimum yearly or daily rate or wage paid for competent adult labor, and that all employment, temporarily, or as the result of contracts, for a less sum, should be discountenanced by public opinion, and,

if persisted in, to the detriment of any, should be prevented by appropriate legislation, rigidly enforced.

This may seem a chimerical way of treating the wage problem, a direct contravention of the law of supply and demand, a premium upon poor class of labor. But let us examine the matter more closely, and see if what we ask is more than the system should do, to secure what is "natural and just" to the recipients of wage, and if it is not something that can be done without any great violation of the present laws of production.

Such an opinion or law would not say that inferior labor should be paid as much as a better class; it would only provide that a workingman, with a family to support, should receive enough wage to enable him to do it prudently. It would prevent a discontented feeling with regard to all laws, make many more hands self-supporting, and remove many a burden and demand of pauperism upon individual charity and the similar provision made by the state.

If a manufacturer agrees to furnish goods for a less price than the cost of production, and becomes insolvent in consequence, his creditors, when contemplating their percentage of receipt, will not hold him guiltless, but think his action fraudulent. He may say the market price of goods was low, —that he wanted to keep his factory running,—that he hoped to do better in future trades; but the fact of mismanagement will remain. How, then, if a workingman, out of employment, knowing that work and money are scarce, wishing to keep his home together, hoping that better times and pay will come, deliberately engages to work for a sum insufficient to meet all the demands for the necessities of life,—is he not acting as fraudulently as the manufacturer? and if it is not his fault, where does the fault lie, and where can a remedy be found? When goods are sold at less than market value, somebody may gain but somebody *must* lose. A law makes such loss unlawful, and indirectly protects those threatened with loss by the involuntary provisions of the bankrupt law. When labor is given at less than the cost of the necessities of life, somebody gains and somebody *must* suffer.

Why should not public opinion or law make such low wage unpopular or unlawful, and protect, directly or indirectly, those threatened with want and suffering?

Why, in justice, should the broken merchant receive the benefit of the bankrupt law, when unable from loss or poor management to pay his bills, and the broken laborer, no more criminal or lacking in good intentions than the merchant, have only the poor debtor's oath to relieve him (and then only from arrest, the debt remaining), with its attendant stultification of his feelings of manhood?

Why should not the insolvent laborer be discharged from all debts, under the provisions of a general insolvent law (in which the legal fees established should not be so large as to be prohibitory in his case), by the payment of fifty per cent, as well as the bankrupt merchant?

Firms and corporations, when threatened with loss, reduce expenses, stop manufacturing and, if necessary, pay half the amount of their bills and begin afresh. The workingman suffers by the suspension of work, can not reduce his expenses materially, gets in debt, has no royal way of beginning again, but must keep on with his load of debt still hanging to him. Either one thing or the other, it is plain, should be done. Either every competent adult laborer should receive enough as wages (the minimum sum and as much more as he can command) to enable him to get along without debt, or he should have the same recourse to a relieving-law that merchants, corporations or other employers possess.

How would this minimum wage plan work? The young unmarried workman, with small expenses, would save money, if prudent; when married, he would have something to begin on. His wages, never running below his expenses, would enable him to maintain his independent position. An advance would be made for one child, then for the second and third, providing him with the means for their support and education. At the proper age, he could give to the state healthy workers, both in body and mind. And what would the state have done for him? Simply provided that his return for labor should pay for his living, and that of his children,—the latter, in turn, adding to the productive power of the state.

Causes beyond the control of legislation, in Massachusetts alone, sustain the present wage system; and all that this state can do, at present, by individual or concerted action,

or by legislation, is to temper its asperities. Whatever may be the outgrowth of or substitute for the wage system,—whether co-operation, industrial partnerships, communism, etc.,—is, of course, at present, but a matter of conjecture, and beyond discussion within the legitimate outline of the subject, the consideration of which we have continued at great length, and here substantially close.

Our work and aim has been to hold the mirror up to the entire wage system (not with restricted application to its working in corporations), in order that it might see its own deformities, and be led to soften its visage and look with more brotherly feeling upon the laborer, who toils on and ever, and who, being worthy of his hire, should receive it.

We anticipate no dire results. We believe, instead, that the condition of the working classes—the many encouraging features of which, our returns make manifest—will grow better and better. That, with less antagonism and more of the spirit of co-operation,—which has no better exemplar than the Golden Rule,—the rewards of labor will be more equitably divided and the evils of the wage system gradually extirpated. And, as all true and lasting progress is founded upon knowledge, we cherish the hope that the labor put upon the preparation of this part of our report has not been exerted in vain, and that some tangible good, from its presentation, will accrue to the industrial classes—especially the child workers—of this Commonwealth.

PART V.

CO-OPERATION.



PART V.

CO-OPERATION.

We are led to devote a chapter to this subject in order to present a statement of the results following the introduction of the principle, as shown by well authenticated statistics. It is claimed by co-operators, that much good has resulted to working people by the application of this system in the transaction of business; first, in assisting the participators to realize a greater pecuniary advantage than was possible under other established forms of business; and second, in guaranteeing increased opportunities for bettering their condition.

The two principal features of co-operation that have been, to a considerable extent, adopted, are the *productive* and *distributive*. Other and more comprehensive forms have been suggested by able and conscientious writers upon the subject, which, if adopted generally, would, from their standpoint, cause the greatest benefit to result to all. But those regarded as the most practical, and which large bodies of people could readily embrace, and from which the best effects would be most promptly realized and appreciated, are the two named.

By *productive* co-operation is meant that form of production in the manufacturing and industrial occupations, where the capital is contributed by the workmen, and the net profit divided among them without regard to market rates of wages; or where persons unite as above and draw the market rate of wages each week or month, and at a stated time make a pro rata division of profits. The form of industrial partnership may also be included under this head, where the industry is managed by the owner of the capital

employed; and after a fair rate of interest has been allowed on the capital, and a stated percentage of the profits has been taken out by the managers, the balance is paid to the workmen in addition to the regular wages. Sometimes the two are combined, the workman being allowed to invest any savings that he may have in the capital, purchasing shares therewith; thus aiding in the extension of the business, receiving interest on his portion of the share capital, and a portion of the net profit besides his regular wages.

Other forms have been introduced, differing some from the foregoing, but not to the extent of conflicting with the general idea.

Distributive co-operation being the feature regarding which statistics are most available and detailed, has received attention at our hands. Our intention had been to have presented information regarding the productive feature; but the comparative meagreness of the statistics regarding the same in our possession, leads us to defer that presentation for a future report.

The *distributive* feature is the management, by co-operative societies, of the stores where are sold the various articles of food and wearing apparel required in families. To clearly illustrate this form, we will give a general idea of the formation of such societies or associations.

A number of persons associate themselves together; prepare a set of by-laws or rules, for the government of the body; decide upon the membership-fee, the amount of the share, the least or greatest number of shares that any member may hold; upon the qualifications required for membership, and upon the general form of management;—a store is then opened.

The funds arising from the purchase of shares (usually) constitute the capital, with which the organization commences business, and increases with the acquisition of members; this share capital receives interest the same as if invested elsewhere.

Upon a purchase being made, and cash paid for the same, the purchaser receives a check or token, expressing upon its face the amount paid; and at a stated time, as at the end of a month or quarter, the various checks are handed in to the

store, and the holder receives his proportion of the net profits made. There are other considerations involved in this system,—such as, for instance, the guarantee (by all being pecuniarily interested in the management) of full weight of goods, free from adulteration. In addition, many societies provide a fund from the earnings, for educational purposes, reading-rooms, etc.; but the only object at this point is to define the term *distributive*, as practically applied to co-operation.

DISTRIBUTIVE CO-OPERATION.

“All to whom want is terrible, upon whatever principle, ought to think themselves obliged to learn the sage maxims of our parsimonious ancestors, and attain the salutary art of contracting expenses; for without economy none can be rich, and with it few can be poor.”

In this country, comparatively little practical illustration of this feature of co-operation, through the control and management of stores by co-operative associations, has been made; nevertheless, the system has gained a secure foothold here, as its many endorsers will testify.

In our own Commonwealth, probably a larger number of such stores exist than in any other state in the Union, and still more *have* existed here; but, through mismanagement, through reported dishonesty on the part of trusted servants, and on account of some obscure causes, have been compelled to cease transacting business, and have been dropped from the list.

Information obtained from interviews with those who have belonged to associations of this character, establishes the fact that they firmly believe in the principle, and do not regard the non-success of the associations with which they have been identified as in the least detracting from the value of the system; much material benefit was rendered to members while the associations lasted, which could have been perpetuated but for the causes named.

From the best information to be procured, we have ascertained that there are fifteen distributive co-operative associations in the state, representing a share capital equalling \$75,000, and assets equalling \$140,000 in value. As but

eight of the number have favored us with reports, we are unable to give the total membership, sales, etc. The eight referred to have a membership of 1,650; a share-capital of \$50,000; assets, \$100,000; and their sales aggregate half a million dollars, annually. Facts in relation to the management, profits, etc., will be given in the following pages, as regards individual cases.

Fall River. — Foremost among associations operating under this system, is the "Fall River Workingmen's Co-operative Association," organized in 1866 as a joint-stock company. This association, after about three months' experience, re-organized under the co-operative law of the state, adopting for its plan in the transaction of business, that of the "Rochdale Equitable Pionèer Society" of England. Its members are people of many nationalities; the larger portion, however, are English, many of whom were members of similar organizations before coming to this country. The capital of the association is made up by shares, at ten dollars each; every member being required to take at least one, and being restricted to thirty. The store sells groceries, provisions, dry goods, ready-made clothing, boots and shoes, and such other articles as are usually required by families. In the sale of these articles, cash is always demanded.

The method of dividing profits is as follows:—

From the net profits ten per cent is carried to the sinking fund, in conformity with the law; a sum is allowed for the depreciation of fixed stock; ten per cent per annum is paid as interest on the share capital. The profits accruing from purchases made by members are divided among them, in the proportion their individual purchases bear to the aggregate; of the profits made on non-members' purchases, two-thirds is paid them, in the same manner as to members; the remaining third, to the extent of ten per cent on share capital, is added to the members' dividend; should the one-third of profits arising from non-members' purchases exceed in amount ten per cent on share capital, such excess goes to the sinking fund. The association has been very successful, and is credited with able management.

At the close of its first year's experience, it had sixty-five members, and a share capital of \$3,600; at the close of the year 1874, its membership had increased to two hundred and sixty, and the share capital to \$19,734, while its assets were about \$50,000. During the year 1874, the sales amounted to \$79,615, and the net profits for the year were \$9,155. During the last quarter of the year, the distribution of profits was, on members' purchases, ten per cent; on non-members', six and two-thirds per cent. In addition, interest on members' capital was paid at the rate of ten per cent per annum; the combined dividends and interest to members, being at the annual rate of about forty-two per cent on the share capital. The average share capital to each member is seventy-five dollars. During the eight years of the existence of the association, it has sold goods to the amount of \$425,277; has paid as interest and dividends to members \$38,179; and has divided to purchasers, not members, \$4,757. As it is not required of those who become members that they should at once pay the entire value of the share or shares purchased, cases are quite numerous where the member has paid but one dollar upon admission, allowing the profits on his purchases to remain in the fund, and now has an ownership of twenty shares in the association; connection with the society having encouraged a *desire* to save, and economy in management made it possible.

Strikes and hard times, instead of affecting its business disastrously, have resulted in a notable increase, as the closing quarters of 1873-74 were the most successful business terms of the association; from which we deduce the opinion that the value of the store is recognized to an even greater extent than the usual trade would seem to indicate, as naturally, economy would govern expenditure upon the cessation of the income. It may be fair to assume, from the results shown, in the experience of this association,—the material aid in the shape of pecuniary gain rendered to the store customer,—that others, whose earnings are small, can in no readier manner enable their contracted incomes to go farther than by affiliating with similar enterprises.

Fall River, having such a successful association within its limits, and a printed statement of its business transactions

distributed quarterly, it would be supposed that additional purchasers would identify themselves with it, and probably one of the prominent reasons why they do not, is, because so many persons are connected with the "dividing stores": these stores are co-operative in principle, but lack the stability of the regularly organized associations, under the law; they are easily affected by dull times, and constantly liable to break up through general lack of employment of members, as the system provides for the purchase of goods in bulk, and the meetings, and payments in advance, are usually but once in a month. We are assured, however, that these semi-co-operative organizations have been quite successful, and important savings have been made for members. This recognition of the co-operative principle may ultimately be followed by a direct connection with the established stores, or the organization of new societies to conduct like stores. The dividing stores in Fall River number thirty, with fifteen hundred members. The aggregate sales, or, to express it more clearly, the amount purchased and divided among members, it is at the rate of \$300,000 a year. In most of the stores the charge to members is four per cent above the wholesale cost; a few manage to pay expenses with three per cent above first cost, and in one or two cases the percentage above cost is slightly in excess of four. Each store is in charge of a president, secretary, treasurer and from three to five others. Two members are selected, whose duties are to buy the commodities required, once in a month; three members are selected as weighers; each member must, in turn, attend to the prescribed duties, or employ another to do so.

The usual method is for the members to meet at the store, a day or two before pay day, and hand in statements of the goods required for the ensuing month. The committee estimate the cost of articles included in these statements, and on the night of pay day, the members pay the estimated cost. The buyers then take the money paid in, and purchase the aggregate quantity of goods named in the statements; on the following nights the goods are weighed out and distributed; the distribution usually occupies two or three evenings, and when completed the stores are closed until the next month. Much the larger number of the stores are located in the base-

ments of tenements, and the cost for rent is merely nominal.

Differing in the matter of management from the majority, is the "Barlow" dividing store. The manager was a member of one of the dividing stores, but being in infirm health, and desiring a change in business, he made a proposition to the members, to take charge of the buying and distributing for them, at the customary profit of four per cent on wholesale cost; which being accepted, he has continued so to do, and the members express satisfaction at the result. He has since added to these duties, the general business of a retailer, and, on sales, charges *from ten to fifteen per cent above* the prices charged to the members of the dividing store, resulting in a saving to members of twelve dollars and a half on each hundred dollars' worth of goods purchased, as compared with customary charges.

The officers of the dividing stores state that, aside from pecuniary advantages, members have been greatly benefited by the inculcation of business ideas, and a general knowledge of the manners and customs of trade.

Worcester. — The largest co-operative association in the state, so far as membership is concerned, of which we have knowledge, is the "First Worcester Co-operative Grocery and Provision Store," organized in 1867. It has five hundred and ninety members; a share capital of \$6,000; assets equalling \$8,750, and annual sales of \$75,000. The association is officered by a president, clerk, treasurer and eight directors, elected annually. The price of each share is five dollars, and the members can dispose of shares to non-members, upon complying with the by-laws. The store is conducted upon a cash basis. In the distribution of profits the following course is pursued: eight per cent per annum is paid on capital; ten per cent of the profits is passed to the sinking fund; if any surplus profits remain, all above enough to keep a fund equalling thirty per cent on the capital, in the sinking fund, is divided on *members'* purchases. No dividends are paid on the purchases of non-members.

We are informed that the association is not now paying dividends, and that a change has recently been made in the

management, with a view to a more successful transaction of business.

New Bedford.—The "Acushnet Co-operative Association," organized in 1867, has one hundred members, a share capital of \$6,900, assets equalling \$13,622, and transacts an annual business of \$71,000. From the profits, they paid last year a dividend of about thirty-two per cent on the members' capital. No dividend is paid on non-members' purchases. The par value of shares is twenty-five dollars. We are assured that the association has paid as dividends to members, during the last three years, two hundred and forty per cent on share capital. The business is the sale of groceries, and cash is required on all purchases, whether made by members or non-members.

Lynn.—The "Howard Co-operative Company" was organized for business in 1870. It has eleven members, a capital of \$2,000, assets equalling \$4,500, and sold goods to the value of \$19,700 last year. No report is at hand of the profits made. No dividends are paid on the purchases of non-members.

Wakefield.—The "South Reading Co-operative Association" was organized in 1866. It has a membership of one hundred and sixty-five; the share capital is \$4,125; assets, \$9,685, and the annual sales equal \$38,000. The association paid, last year, between eight and nine per cent on members' capital. No dividends were paid on non-members' purchases.

Holyoke.—The "Holyoke Co-operative Association" was organized in November, 1873. It has a membership of seventy. The par value of shares is ten dollars each. Those desiring to become members can do so upon paying an admission fee of one dollar and taking one or more shares, no member being allowed to hold more than twenty. In the distribution of profits, the association pays interest on share capital, and dividends on purchases, to members; also dividends on purchases made by non-members. It is transacting business at the rate of about \$10,000 a year.

Gardner.—The "Sovereigns' Co-operative Association" commenced business in September, 1874, having purchased the business (grocery) of the "Gardner Co-operative Association." It has one hundred and three members, a share capital of \$1,800, and assets equalling \$3,000. During the fifty days which elapsed between commencing business and furnishing this office with a statement of its condition, the sales were \$3,346.

Natick.—The "Natick Co-operative Grocery Store" has a membership of three hundred and thirty, a share capital of \$4,000, and transacts business to the amount of \$100,000 a year. The par value of the shares is ten dollars. The association sells goods to its members five per cent cheaper than to non-members. At the end of its first twenty-one months' existence, a dividend of ten dollars on each share was declared, the members allowing it to remain with the capital. Three years later a dividend of ten dollars per share was paid, and in January, 1874, a dividend of fifty per cent on share capital (\$5 per share) was paid. No dividends are paid on the purchases of non-members.

The law of the state gives very fair opportunities for the organization and expansion of the co-operative system, and provides that share capital to the value of twenty dollars for each member shall be exempt from attachment. If it should be carried farther, and those associations which make a return of profits to all purchasers be exempted from paying a tax to the state, it would render additional assistance to the laboring people who trade with them, and place them on an equality with retail stores, owned and managed by individuals, while now it regards them as corporations liable to taxation.

Massachusetts being a manufacturing state, and co-operation abroad having attained vast proportions in such districts, why it has not assumed greater importance *here* is problematical; how much the lack of homogenousness, as a result of there being representatives of so many nationalities among our people, may have prevented the more general adoption of the co-operative system, it is of course impossible to state. But in view of the admitted fact, that material prosperity has

resulted, in many European countries, to persons affiliating with similar organizations, we are impressed with the belief that it is more directly traceable to a lack of diffusion of knowledge respecting the details of the system; as it is not susceptible of doubt that *our* working people as much need and will as anxiously seek to render the purchasing power of their wages as great as in other countries.

Co-operation guarantees security, and carries with it that which is most desirable,—constant improvement, pecuniarily and morally.

Note what Thomas Hughes, member of Parliament, says, in a paper read before the Social Science Association: "But a gain of profits in money is, after all, but a small part of the benefit which the members have derived from their societies. They have been secured from adulteration or fraud of any kind, because, the whole profits belonging to themselves as customers, there has been no motive for trade frauds. Men don't poison themselves willingly or take money out of one pocket in the shape of price for the purpose of shifting it to the other in the shape of dividend or bonus. They have destroyed indebtedness by buying and selling only for ready money, thus insuring the wholesale dealer against losses by bankruptcy, and freeing themselves from that thralldom, through credit, in which they were formerly held. And this ready-money system has led to the cultivation of prudence and temperance; for the workingman who has to meet the requirements of his family with ready money can not be a thoughtless man or a spendthrift. And lastly, it has given business habits and experience to a great number of men, who have either acted as directors of the societies or taken an active part in the discussions at their frequent business meetings. Thus the store has become to the North-Country working people not only a cheap, ready-money shop in the most perfect form, but also their school and their club-house, their savings bank and exchange."

If the results have been as stated by Mr. Hughes,—if his statements are fully corroborated by statistics,—we can hardly incur the denial of any one in saying that just such a system has a wide field open to it in this country. Neither lack of vitality, the fact that some societies have been obliged to sus-

pend business, nor the ridicule of those interested in keeping the avenues of trade as they now exist, can in any sense impair or weaken the principle. It must present itself to us, sooner or later, as the conditions of life are not so materially different as to cause this system to be of great importance to the working people of one nation and valueless to those of another. National boundary lines can not so change human nature as to make it impossible to introduce plans for the alleviation of want and suffering whose efficacy has been proven and whose practicability tested. If the introduction of a large number of such stores by co-operative societies will result in the elevation of the people, the enlarging of opportunities through the annual saving of money, now used in satisfying the not moderate demands of the retailer; if by the general adoption of the system, the masses will be enabled to live better and cheaper, may we not express the hope that it will be one of the great levers by which such calamities as strikes, which entail upon the people suffering and deprivation, cause bitterness and strife, disarrange domestic and business relations, and leave behind them a long train of terrible woes, shall be removed from existence!

In looking at the possibility of advancing the formation of co-operative societies, we naturally inquire into the circumstances which have occasioned the success of co-operation; meaning, *How* has it been possible for these savings (dividends paid) to be made? And first, we find that the management being taken in charge by the co-operators, and conducted on a cash basis, a very large percentage in the shape of expenses is saved, and no bad debts incurred. In England, in 1870, the sales of goods by co-operative stores amounted to fifty millions of dollars, and the expenses were a trifle less than four and one-half per cent on the business; it is estimated that the expense of conducting the retail stores in England on the "competitive principle" is from fifteen to twenty per cent per annum, and the author of the statement pertinently says, "this contrast would seem to settle the question as to which system is likely to prevail."

Mr. Robert Harper, of Birmingham, England, says of the retail stores:—

"The writer has travelled through Great Britain and Ireland for more than twenty years, and has had large experience of the exceedingly unsafe character of the trade with retailers. Every trade is so crowded, that it is impossible all can live. The failures are so numerous, that the wholesale dealer must operate under highly favorable circumstances to make it pay. Probably seven-tenths of all beginners in retail trades fail within three years. Many retailers are in a chronic state of insolvency, living in a laborious and anxious permanent committee of ways and means. This is a perfectly natural result of the present system of retail trading. There are probably four times as many shopkeepers in every trade as are necessary to supply the wants of the community. Thousands more are always waiting to begin shopkeeping. Repeated failures in the same shop never bring down its rent; on the contrary, the tendency is everywhere to advance. Notwithstanding the fierce competition on account of the heavy expenses of shopkeeping in good localities, goods are sold fearfully dear. One-third of the shopmen and shopwomen would be amply sufficient to distribute the goods; and probably one-tenth the amount of stock now kept would be sufficient if concentrated in fewer places. The losses by old and depreciated stock, if told, would be quite unbelievable, independently of the loss of interest on capital."

We have no reliable data at hand to show the average expense of conducting retail stores in our own state or country, but in all probability the same relative difference exists; in fact, we have already shown that, at the Fall River co-operative store, the disposable profit was ten per cent on the purchases, which, with interest added, made forty-two per cent on the share capital, and the amount paid as dividends must have been saved from the sources named.

ENGLAND.

For evidence of the constantly increasing importance of the vast interests controlled by distributive co-operative societies we must look abroad; and first, to England, for there the stupendous strides of the system are marked. The returns from co-operative congresses, meetings, govern-

ment reports, etc., are replete with information conveying undoubted proofs of the immense benefits which it is claimed by co-operators have followed the introduction and accompanied the expansion of the innovation adopted upon previously recognized habits of trade.

Not alone in the pecuniary consideration has the system carried encouragement and assistance to those embracing its tenets, but in a prominent degree the extension of the principle has supplied educational facilities, by the addition of reading-rooms, the institution of libraries, and the conveyance of business ideas to its vast membership.

If co-operation in England has but resulted in pecuniary gain to its members, enabling them to obtain more of the every-day comforts, it is entitled to endorsement; but, when combined with the all-important features of education, thrift, the inculcation of habits of saving, and an apparent vigilance over the welfare of its individual members, it must be accepted as a system having for its foundation the Christian sentiment, "Help one another." And no class of people, unless actuated by mercenary motives, can justly seek to prevent the expansion, the development to the farthest limit, of a principle containing within itself a powerful motor for conveying the greatest good to the greatest number of those who, from their station in life, can ordinarily receive but a bare subsistence, and are debarred by circumstances beyond their control from enjoying advantages for their own improvement.

While those immediately interested in the results of co-operation are constantly bending their energies to encourage its growth, it has, in addition, the assistance of many very able and distinguished men, who are constantly, by word and act, rendering important service in giving increased impetus to the already remarkable advance of the system. Mr. Hughes and Mr. Morrison, until recently members of parliament, are noticeably extending valuable and lasting aid to masses of men in humbler life than themselves, by their cordial recognition of the value of the co-operative principle, and their practical efforts, through addresses, advice, etc., and the persuasion of others, who have not affiliated with such enterprises, to do so. To these two gentlemen

belongs great credit for their successful efforts to expunge from the statutes laws that restricted the growth of co-operative societies; and they have not been deterred from the presentation of their conscientious views by intimations of loss of public office. Many other able and influential gentlemen are constantly engaged in the furtherance of the same object. Co-operative institutes have been organized; annual congresses of co-operation are held; the quarterly and semi-annual meetings of societies are made profitable by the presence of active supporters of the system, and at such times views are freely interchanged as to the best possible means of extending the growth of the societies, and arrangements entered into for the greater bestowal of advantages on the individual member.

A co-operative newspaper is spreading valuable information constantly as to their condition. Large and important wholesale establishments, for furnishing goods to the distributing stores, have been founded, and are doing an immense business. Libraries and reading-rooms have been instituted; and in many towns classes in the English branches, and in some towns in the sciences, have been formed, all under the management and support of the societies. In addition, the societies have, by vote of their members, invested large amounts of money in co-operative productive associations, and in many cases assisted tottering distributive stores on to a secure basis. So that the distributive stores, organized primarily for the benefit of individual societies, have, by their adherence to the principle, builded well, and the results to-day are seen in the comprehensive whole, bound together, in fact, only by the votes of the members of each society, but constituting an immense, undivided mass of interests. The first distributive society of which record is made, that adopted the plan of returning dividends to members, on purchases, was organized in 1794 at Mongewell, Oxford County, for the benefit of the poor in that and some adjoining parishes; the principal purchases were bacon, cheese, candles and salt, which were obtained from wholesale dealers, and sold for cash, the profit being divided among purchasers. The manager received for compensation one shilling a week. Mention is made of one or two co-operative

societies organized in Glasgow, Scotland, in 1823, that still survive. Four co-operative stores were organized in 1828; at the end of the year 1829 there were one hundred and thirty; at the end of 1830, four hundred and seventy; and at the close of the year 1832, the total number was seven hundred. Through lack of safeguards regulating the management by law, the habit of dividing profits wholly to capital, and in very many cases through the adoption of the credit system, these stores went rapidly out of existence, and for several years comparative quiet, so far as co-operative stores were concerned, characterized the working people. In 1844, the modern co-operative societies, as managers of stores, began to be formed, the initiative being taken by the Rochdale Equitable Pioneer Association. As its history is of importance to co-operators, we will pay it more than a passing notice, and give a brief review of its inception and progress.

The Rochdale Equitable Pioneer Society.

This society is situated in the town of Rochdale (in the manufacturing county of Lancashire, England) which has, with outlying territory, annexed during the last few years a population of about sixty-five thousand persons. It is the largest co-operative society in Great Britain, and its development has been characterized by such general prosperity that it is recognized as a powerful exponent of the co-operative system, particularly in the distributive feature.

As an encouragement to similar organizations, it has rendered valuable aid, its growth having been prominently marked by excellent management.

To those who are, or may be, giving attention to the subject of co-operation, the Rochdale society stands as a beacon light; and although many of our readers may be familiar with the history of its establishment and progress, we are yet led to devote a few pages to giving a brief history of the expansion of co-operative interests under its charge, conceiving that something in the nature of encouragement may be bestowed, and that ultimately points covered by its experience may be of value to originators of like associations.

As will naturally be surmised, the initiation of the movement was the result of discussions relative to enlarging the

opportunities of the working people,—they feeling that they were entitled to better wages to enable them to secure advantages heretofore withheld, and receive more of the benefits which their constant labor was realizing for the community.

In the early part of the year 1843, manufacturing interests being in a very prosperous condition, some flannel weavers in Rochdale applied for an increase of wages, believing the time to be exceedingly propitious for such an effort. They were unsuccessful; and, undoubtedly feeling that lack of success at such a time presaged failure in the future, their condition was more distinctly portrayed than ever, and invited and received serious consideration.

Realizing that by their own honest efforts must their improvement be wrought out, they repeatedly met together for interchange of views, and to perfect some plan by which their objects could be accomplished. Having, however, failed to gain the solution of the problem to the extent of agreeing upon a particular course of procedure, at the close of one of the small meetings something like a dozen of them agreed to deposit about six cents each per week, to form a common fund, with the ultimate object of carrying on business, both productive and distributive, when a plan should be perfected.

During the balance of the year the contributions were regularly paid, and other contributors were added.

Early in the year 1844, at a meeting of workingmen, the contributors presented the cause uppermost in their minds, and after a full and free expression of a great diversity of views, they adopted the suggestions advanced by earnest believers in the principle of co-operation; and voted to open a store for the sale of provisions and clothing, to be conducted on the co-operative idea of dividing the profits to the purchasers, selling goods at full weight, and free from adulteration.

This was not all that was contemplated, however, as their declaration of objects made on the same evening clearly proves.

That the reader may more readily comprehend the earnestness with which they entered into their work, we quote this declaration of objects from Mr. Holyoake's "Self-Help by the People."

"The objects and plans of this society are to form arrangements for the pecuniary benefit and the improvement of the social and domestic condition of its members, by raising a sufficient amount of capital, in shares of one pound each, to bring into operation the following plans and arrangements:—

"The establishment of a store for the sale of provisions, clothing, etc.

"The building, purchasing, or erecting a number of houses, in which those members, desiring to assist each other in improving their domestic and social condition, may reside.

"To commence the manufacture of such articles as the society may determine upon, for the employment of such members as may be without employment, or who may be suffering in consequence of repeated reductions in their wages.

"As a further benefit and security to the members of this society, the society shall purchase or rent an estate or estates of land, which shall be cultivated by the members who may be out of employment, or whose labor may be badly remunerated."

"Then follows a project which no nation has ever attempted, and no enthusiasts yet carried out:—

"That, as soon as practicable, this society shall proceed to *arrange the powers of production, distribution, education and government*; or in other words, to establish a self-supporting home-colony of united interests, or assist other societies in establishing such colonies."

That this statement of intentions savored somewhat of overconfidence will naturally be admitted, when the extreme paucity of capital, limited membership, and their opportunities are taken into consideration; yet, in the twenty-nine years of the existence of the Rochdale Pioneer Society, so immense has its interests become, and so nearly have they adhered to many of the features presented in the original statement, that one is compelled to pay a tribute to the energy of those who, impelled by strong desires for their own elevation, through their own efforts have successfully consummated so many of their purposes.

In the month of October, 1844, the Rochdale Equitable Pioneer Society was registered; and in December following,

with a membership of about twenty-eight, and a capital of about \$140, the store was opened. Having expended one-half of the funds for fixtures, etc., the working capital was reduced to about \$70, and the goods purchased therewith were exhibited for sale on the opening night.

For a description of the effect produced upon those living in the vicinity of the store, and upon the co-operators themselves, we again quote from Mr. Holyoake.

"And on one desperate evening—it was the longest evening of the year (the 21st of December, 1844)—the 'Equitable Pioneers' commenced business; and the few who remember the commencement look back upon their present opulence and success with a smile at their extraordinary opening day. It had got wind among the tradesmen of the town that their competitors were in the field, and many a curious eye was that day turned up Toad Lane, looking for the appearance of the enemy; but, like other enemies of more historic renown, they were rather shy of appearing. A few of the co-operators had clandestinely assembled to witness their own *dénouement*; and there they stood, in that dismal lower room of the warehouse, like the conspirators under Guy Fawkes in the parliamentary cellars, debating on whom should devolve the temerity of taking down the shutters and displaying their humble preparations. One did not like to do it, and another did not like to be seen in the shop when it was done; however, having gone so far, there was no choice but to go further; and at length, one bold fellow, utterly reckless of consequences, rushed at the shutters, and in a few minutes Toad Lane was in a titter. Lancashire has its *gamins* as well as Paris,—in fact, all towns have their characteristic urchins, who display a precocious sense of the ridiculous. The 'doffers' are the *gamins* of Rochdale. The 'doffers' are lads from ten to fifteen, who take off full bobbins from the spindles and put on empty ones. Like steam to the engine, they are the indispensable accessories to the mills. When they are absent, the men have to play; and often when the men want a holiday, the 'doffers' get to understand it by some of those signs very well understood in the freemasonry of the factory craft, and the young rascals run away in a body, and, of course, the men have to play until the

rebellious urchins return to their allegiance. On the night when our store was opened, the 'doffers' came out strong in Toad Lane,—peeping with ridiculous impertinence round the corners, ventilating their opinion at the top of their voices, or standing before the door, inspecting, with pertinacious insolence, the scanty arrangement of butter and oatmeal. At length, they exclaimed in a chorus: 'Aye! the owd weavers' shop is opened at last.'"

Having fairly launched the innovation on established customs of trade, and begun the management of business on their own account, they experienced much trouble from the limited amount of funds in their possession,—being unable to purchase in sufficiently large quantities to guarantee to the consumers the best quality of goods at market prices. Nothing daunted, however, they immediately took steps to remedy the difficulty, and, in the year 1845, the members of the society voted to increase their capital to \$5,000.

In making the addition, each member was required to take not less than four shares, representing \$5 dollars each. They were permitted, however, to pay for the shares by depositing an amount equalling about six cents, paying the same amount each week, and allowing all interest and profit to remain in the fund until the amount equalled the four shares in the capital.

Up to this time the store had been open but twice (evenings) in each week. In the month of March, 1845, the business having increased, it was voted to have the store opened several hours on each of five days in the week, including Saturday afternoon. Following this, their business grew noticeably; and in the month of October of the same year they added meat to their stock in trade. At the close of this year, the membership had increased to seventy-four, and the capital to \$905. The sales for the year aggregated \$3,550, and the profits to members equalled \$160.

The next three years (1846–47–48) the society progressed slowly, but still its interests grew in importance, and the close of December, 1848, found the society with one hundred and forty members, and a capital of \$1,985. The sales for the year had grown to \$11,380, and the disposable profit was \$580.

The business now assumed such dimensions, that increased accommodations were demanded, and the whole of the building, then occupied by them in part, was taken on a long lease. The second floor was devoted to a meeting-room for members, where the society's private business could be transacted, and also to the purposes of a reading-room, being supplied with newspapers, periodicals, etc.; in addition, a stall was opened for the sale of books and papers, the profits being appropriated to supplying the reading-room with the required material.

During the year 1849, the society increased materially both in membership and in capital; and at the close of the year presented a remarkably satisfactory report,—having three hundred and ninety members and a capital of \$5,965. The sales for the year were \$30,055, and the profits to purchasers \$2,805.

The year 1850 was a very successful one for the society, as it nearly doubled its membership, having in December six hundred, and a capital of \$11,495. The sales amounted to \$65,895, and the disposable profits reached the sum of \$4,445.

Rapidity of growth here demanded a forward movement on the part of the society, and in April, 1851, it was ordered that the store should be kept open all day; and the immediate management of it was placed in the hands of a superintendent and two assistants. At the end of the year their sales had increased to \$88,190, on which the disposable profit was \$4,950.

During the years 1852–53–54, the society constantly grew in membership, the capital was increased each year; the sales and profits also increased, and at the end of the year 1854, the membership was nine hundred. The capital had grown to \$35,860; the sales for the year were \$166,820, and the disposable profit on the same was \$8,815.

The year 1855 was in every sense a favorable one for the co-operators, as the membership of the Pioneer Society rapidly increased, and in December numbered fourteen hundred. The increase in capital kept pace with it, the society's books showing it to be \$55,160 at the close of the year, while the sales equalled \$224,510, and the profits, \$15,530.

In 1857, the membership grew to eighteen hundred and fifty, with a corresponding increase in other respects. For the next thirteen years a constant gain in membership was made, but one year (1862) showing a less number of members than at the end of the year immediately preceding it, and but four hundred at that.

At the end of the year 1871, the number of members was six thousand and twenty-one, the capital \$598,225; the sales of the year were \$1,239,370, on which the disposable profit was \$117,040.

The beginning of the year 1874 disclosed the society progressing wonderfully, its membership being more than seven thousand; its assets were \$927,215; its capital, \$868,055. The sales for the year 1873 amounted to \$1,436,060, and the disposable profit from all sources, \$159,785.

The capital averaged \$122 per member; the average dividend to each, based on share capital, aside from five per cent interest paid on some, was about seventeen per cent, and this was after the customary charging off, as depreciation on fixed stock, had been made, and two and a half per cent on net profits had been applied for educational purposes. It will be borne in mind that the "dividend" is based on the purchases; we have expressed it herein as so much per cent on share capital, as in order to become a member one is obliged to buy shares, and in trading with the co-operative store he receives at least as much for his expenditure as he would elsewhere, and also receives the percentage stated on his capital invested.

In addition to this gain, each member is a part owner in assets of greater pecuniary value than is represented by the figures given, as the annual custom of charging off a stated percentage for depreciation has reduced the assets as expressed on paper below their market value.

During the twenty-nine years of the existence of the society it has sold goods to the value of \$17,861,615, and the profits made have been \$2,160,485.

On the first year of the existence of the society it occupied but one floor for its business purposes; afterwards, the whole building; and it has now removed to a spacious four-story stone-front building, with ample accommodations for the

transaction of the business. Provision has also been made for the comfort of the members, as the building contains a library, news-room, and a hall capable of holding two thousand persons.

The building with land cost about \$65,000, and, by the annual custom of depreciation, it now stands on the society's books at about \$48,500.

The "Co-operative News" of England (1873), estimates the cost of the society's "fixed stock," including all buildings, land and cottages, to have been about \$280,000; it now stands on the society's books at a valuation of about \$215,000, having been depreciated \$65,000.

The principal store has sixteen branches, engaged in the sale of groceries, provisions, drapery, boots and shoes, clogs, clothing, etc. In addition, it has beef, pork and baking departments from which to furnish the store; also a tobacco manufactory. It also owns and lets one hundred and twenty cottages.

The educational department is in every sense creditable to the society. The library, in the central store building, contains nine thousand volumes of good and useful books, adapted to all classes and ages of readers. It is open every day from nine to half past one, and from three to eight P. M., except on Tuesdays, when it closes at one P. M. for a half-holiday.

The number of news-rooms supported by the society is twelve, which are provided with the daily and weekly newspapers, periodicals, monthlies and quarterlies of the best general literature of the time, representing all classes and shades of politics, religion, science and social reform.

Reference libraries of above two hundred volumes at the central, and gradually increasing ones at the branch news-rooms, are always open, and are well adapted for giving immediate information on subjects concerning the interests of all classes of the community.

In the central news-rooms are kept globes, maps, atlases and telescopes for the use of the members. The librarian has in charge and is authorized to let out at reasonable charges, telescopes, stereoscopes, etc.

From the educational fund is paid the expenses of night schools, instruction of classes in the languages, scientific classes, lectures, etc.

It will thus be seen by a perusal of this sketch of the history of the Rochdale Equitable Pioneer Society, that it has not deviated from the course originally entered upon, and while all may not have been accomplished that was contemplated, particular reference being made to the productive feature, the society has demonstrated that much can be done by concerted movements of energetic men bent upon the accomplishment of a worthy purpose.

From 1844 to 1848, but few societies were formed; but in the latter year and 1849-50, many co-operative societies were organized, there being at the close of 1850 about eighty-three. In 1851, a rapid growth of such societies took place, the number being nearly doubled at the end of the year, or one hundred and seventy-four. The number of societies and the membership in those established continued to increase each year, and ten years later (1861) the number of societies making returns to the government was one hundred and fifty, with a membership of forty-eight thousand. In 1864, the number making returns was three hundred and ninety-four, with a membership of one hundred and twenty-nine thousand. Two years later the returns showed reports from four hundred and thirty-six societies; number of members, one hundred and seventy-five thousand. In 1868, six hundred and seventy societies made returns of about two hundred and nine thousand. In 1870, seven hundred and forty-six societies made returns, showing a membership of two hundred and forty-nine thousand.

At the end of the year 1873, there were seven hundred and ninety societies that had reported to the registrar, having a total membership of nearly three hundred and forty-one thousand. The total assets were in excess of twenty-two millions of dollars; members' capital, about sixteen and a half millions of dollars. From the sale of goods there were received over sixty-eight millions of dollars. The expense of conducting the business was a trifle less than four per cent on the sales.

The disposable net profit on the year's business was four and a half millions of dollars, of which an amount exceeding

four millions was paid as dividends on members' purchases (not including interest on share capital), and ninety-two thousand dollars on the purchases of non-members. Thirty-four thousand dollars were allowed from the profits for educational purposes.

The average membership to each society was four hundred and thirty-one (some have above seven thousand members). The average share capital to each society was \$17,700, and the average share capital to each member was \$41+.

The average dividend to members on purchases (not including five per cent interest on shares) was \$12+, or *thirty per cent* on the members' capital.

Nearly four millions of dollars are invested by them in other societies and companies.

Mr. Edward Owen Greening, at the Halifax Co-operative Congress, in 1874, estimated the annual business, including that of Scotland and of those societies in England and Wales that had not made returns to government, to equal *one hundred millions* of dollars; and, estimating the return on purchases to average ten per cent, it resulted in an annual saving to the purchasers of *ten millions* of dollars; and he further called attention to the freedom from adulteration of food enjoyed by co-operators, estimating the saving from the *two* sources to be between twenty and twenty-five millions of dollars.

Co-operation in England is, at the present time, largely confined to the northern manufacturing counties of Lancashire and Yorkshire, although the system is gaining actively in supporters in the counties of Northumberland and Durham. Quite a number of such societies exist in Cumberland, Derbyshire and Cheshire. In the southern counties but little attention has as yet been paid to co-operation. Under the active propagation of co-operators' views, however, we may expect to soon hear of its growth in those counties.

The modern form of co-operation was early introduced into Lancashire County (about thirty years ago) starting with Rochdale; thence into Yorkshire County, and on into the mining counties of Durham and Northumberland, some sixteen or eighteen years ago.

Lancashire County has a population of about two million eight hundred thousand, and at the beginning of the year

1873, of the seven hundred and forty-six societies in England and Wales that reported to the registrar in the preceding month, one hundred and sixty-seven were in this county. They show a membership of nearly one hundred thousand; assets of nine millions of dollars. The share capital was over seven millions of dollars; the cash received for the sale of goods was over twenty-one millions of dollars, on which the disposable net profit exceeded one and a half millions of dollars.

In Yorkshire County, with a population of two million four hundred thousand, there were one hundred and sixty-four societies that reported to the registrar, having a membership of over eighty-five thousand; a share capital of four millions of dollars. The sales for the year were over thirteen millions of dollars. The disposable net profit for the year was nearly one million of dollars.

As an indication of how the co-operative system has been adopted in some parts of England, the following statements have been prepared :—

First, Oldham in Lancashire County, has a population of about one hundred and thirteen thousand, the larger portion of whom are engaged in spinning, weaving and the iron trades; there are something like forty mills, with a nominal capital of eight millions of dollars. It is said that nearly all of the mill owners have risen from the ranks of the workmen. There are in the town three co-operative associations, having some fourteen stores. The membership is about five thousand six hundred, and the share capital above seven hundred thousand dollars. The sales of goods by these societies equalled, in 1872, a million and a half of dollars, on which the disposable net profit was about one hundred and seventy-three thousand dollars. The amount devoted to educational purposes in that year was about \$4,000. The societies support some fourteen news-rooms, and two flourishing libraries. In addition to the distributive stores they have a corn-mill, to supply the stores at cost; working with a capital of \$160,000.

One decided proof of their endorsement of the system is, that they have invested in other co-operative societies and joint-stock manufacturing companies, nearly half a million of dollars; in addition, a large amount of money is invested by

the people in shares in manufactories, the shares being placed at small value to enable them to do so. The town of Rochdale, before referred to, as having a population of sixty-five thousand, is a remarkable illustration of the co-operative system. By the registrar's report, six societies are located here, having a total membership of eleven thousand five hundred; the share capital held by them is nearly \$800,000. The sales, in 1872, equalled \$1,800,000, and the dividends on purchases equalled \$193,000; amounting (with five per cent as interest) to twenty-nine per cent on the share capital.

Here the co-operators have also a corn-mill, to furnish distributive stores at cost price, employing a capital of \$355,000. The sales at the mill for the first quarter of 1874, were at the rate of a million and a quarter of dollars a year. The Rochdale Co-operative Manufacturing Company, located here, has a membership of about thirteen hundred, a share capital of \$330,000 (shares at \$25 each), and, in the first quarter of 1874, sold goods at the rate of nearly a million dollars a year. Thus it will be seen that Rochdale is a co-operative town.

LONDON.

The Civil Service Supply Association.

This society differs from the "regular" co-operative stores in this particular, that the goods sold by it are charged for at a price above the wholesale cost that includes *expenses only*,—the profit being discounted; and it is said that the difference between the prices charged by this association and those charged at the retail stores is "enormous," determining the fact that large savings accrue to the purchasers. One objection raised by the co-operative people in other sections is, that this system rather encourages extravagance in purchases; while, by the usual co-operative method, the market rates of charges are made for goods, the purchasers limit themselves to their real requirements, and, in the dividend declared at the end of the quarter, they have an absolute saving. Unquestionably the objection is founded on sound logic, as it is easy to convince one's self that, articles being comparatively cheap, a few more purchases may be made of luxuries, and what otherwise might have been saved has

been expended. Nevertheless, the association is co-operative, inasmuch as it allows to every purchaser his proportion of the *profits*; that is, the difference between an increase of six or seven per cent (for expenses) over the wholesale cost and the prices charged at the ordinary retail stores.

This society was started in the winter of 1864-65 by some of the post-office employes, as they had come to the realization of the necessity that they should have more pay or buy their provisions cheaper. The postmaster having declined to accede to the former, the alternative was accepted, and the movement was inaugurated by the purchase of half a chest of tea, in the distribution of which they found that the saving was from twelve to eighteen cents a pound; this was followed by further purchases of tea, and the employment of a person to weigh it out in packages of two or three pounds each, the servant receiving as compensation for his labor the quantity above the invoice the chests contained. The success of the enterprise was regarded as so great, that the purchase of coffee was then undertaken; and, as additional members were constantly coming in, who desired to extend the purchases to groceries, a regular association was formed and a room hired to be used as a store. The organization was called the "Post-Office Supply Association"; and, when latterly the store invited the trade of all the persons in the civil service, the present name was adopted.

The original prospectus read as follows:—"This association has been formed for the purpose of supplying officers of the post-office and their friends, with articles of all kinds, both for domestic consumption and general use, at the lowest wholesale prices." Accompanying the foregoing was a price-list of articles kept, and the statement was made that arrangements had been made with dealers for supplying all other articles.

The rapid growth of the association compelled its removal three times within a few months, the last time into a building for which was paid \$2,000 a year as rent. The business of the association continuing to increase remarkably, they hired a part of the building next to the store, then the whole of it, and within a very short time the house on the other side of the store was also hired. These stores not being sufficient to

accommodate the business, additional premises were hired in other localities, and the association ultimately moved into spacious quarters in the Haymarket. It has now a handsome building, especially adapted to its purposes, the first cost of which was \$75,000, without the land. The association pays as rents about \$11,000 a year. Four hundred persons are employed by it; the salaries and wages paid equalling \$240,000 a year. The membership of the association is over four thousand. Each member has a right to bring in a stated number of friends as subscribers (the subscribers number fifteen thousand), who are required to pay about \$1.25 annually for the privilege of trading with the society and receiving goods at its low prices. The full members hold one share each, value five dollars; the share is not transferable, neither can it be withdrawn. Upon the death of a member, his share is cancelled, and the deposit returned to his family.

In making up the price-list, full allowance is made for expenses; and as the expenses have not equalled this provision, a fund has grown from that source, and the annual payments from subscribers, that is now \$365,000. In the year 1872, the accumulations from the sources mentioned were upwards of \$60,000. The sales of goods, consisting principally of groceries, cigars and tobacco, wine and spirits, hosiery and drapery, stationery, books, music and jewelry, equalled, in 1872, three and a half millions of dollars. The total cost of handling this immense amount of goods was about seven per cent on the sales.

The entire assets of the association, at the end of 1872, were nearly \$600,000. The following table will show the amount of sales made each year up to June 30, 1873:—

YEAR.	Amount.	YEAR.	Amount.
1865, . . .	\$25,000 00	1870, . . .	\$2,235,000 00
1866, . . .	105,000 00	1871, . . .	3,230,000 00
1867, . . .	415,000 00	1872, . . .	3,615,000 00
1868, . . .	1,090,000 00	1873,* . . .	1,960,000 00
1869, . . .	1,725,000 00		

* First six months.

The limit to the number of "subscribers" is fifteen thousand. That number having been reached in 1873, unless the rule is amended, about four millions a year may be stated as the annual trade for the twenty thousand members and subscribers—an average of \$200 trade by each.

The general management of the stores remains as at first, in the hands of the members of the association; examining and auditing committee, etc., having duties to perform at stated times. In the few years of its existence, over \$12,000,000 have passed through the hands of the committee, and the first case of dishonesty is yet to come.

A price-list is furnished by the association, making a book of two hundred pages. Two hundred and fifty firms have contracts to supply the association, and the saving to members on purchases is from five to twenty-five per cent. It is stated that the retailers have endeavored to persuade parliament to prohibit the civil service members from engaging in the management of such stores, but unsuccessfully; also that the retailers threatened to withdraw their trade from the wholesale dealers should they continue to sell to the association; but the latter increased the list of "subscribers" to fifteen thousand, resulting in a trade sufficiently large to invite the wholesalers to disregard the threats made, and accept the trade of the association.

Several other co-operative societies exist in London, but they are small. The introduction of the new "wholesale co-operative store," in the city, will undoubtedly give an appreciable impetus to the formation and growth of distributive societies.

We find mention made of the contemplated adoption of the system by the London clubs, having a central store and from it supplying the clubs in the co-operative manner.

The "London Co-operative Institute," containing men whose reputations are national as legislators and scholars, is engaged in pushing forward the principles of co-operation, and the influence of the organization must be productive of increased activity in the formation of societies. As the best means of conveying information concerning the work of the institute, we append a copy of a circular issued last year:—

"Permit us to invite your attention to the objects of the Co-operative Institute, which has been just opened.

"Its founders desire to create a deeper interest in all forms of co-operation which may promote the highest well-being of society.

"They further desire to create the means of becoming acquainted with the thoughts of all who have made the improvement of human society their study, as well as with the actual arrangements which have been at various times devised and carried out with that object. With this view, a library will be formed of works on political economy, political history, social philosophy, and moral and mental philosophy; and the study of these subjects will be further promoted by courses of lectures, by classes, and by free and thoughtful discussions.

"The founders of the institute trust that by such an agency those forms of productive and distributive co-operation in industry and trade, which have so greatly raised the economic and social condition of the industrial classes in the north of England, will take vigorous root in the metropolis and bear similar fruit.

"The founders of the institute particularly desire to create a stronger sense of public duty among members of the community, a better and more serious appreciation of political questions, as well as the means of social intercourse between thoughtful men and women of all classes.

"To bring together as fellow-inquirers, fellow-students and fellow-workers, all who are animated by a great desire of improving society, irrespectively of artificial class distinctions, will in itself be no small object.

"As the means of promoting these aims, there will be a library, a reading-room furnished with the best reviews, classes, lectures, discussions; and also those forms of recreation which refine and elevate the taste, such as music and elocution.

"The success of this effort must, of course, depend upon the ready support of those (not too many in number) who quite recognize the value of such aims.

"We ask you, therefore, very earnestly, to give what support you can to this enterprise, and to allow us to include you among its members.

"We shall be glad of any suggestions you may have to make, and shall hope for your practical co-operation whenever an opportunity may offer, either in lecture, class, or discussion room.

THOS. HUGHES.

W. MORRISON.

EDW'D OWEN GREENING.

"OCTOBER, '74."

In closing the review of distributive co-operation in England, it is proper to say that the great results achieved by the co-operators have not been accomplished without surmounting great obstacles.

Until within a few years the laws have not favored them much, and yet through the active interest of such members of parliament as Messrs. Hughes, Morrison, Brassey, Cowen and others, the laws have been repealed that prohibited the societies from investing their surplus capital in lands, and from organizing co-operative mining associations. The laws have also been amended to allow a greater investment on the part of members in the societies.

That the retailers have viewed with alarm the immense increase of co-operative interests is true, and opposition has been made and criticism freely bestowed by these people, as well as by a non-co-operative press, in certain quarters. So far as this opposition could concentrate itself, it has done so, and a notable result of its efforts (so ascribed) is seen in the defeat of Thomas Hughes, Esq., and Walter Morrison, Esq., for seats in the present parliament. But we find both of these gentlemen taking an active part in the Halifax Co-operative Congress, 1874, which would seem to demonstrate their intention to adhere to a principle believed to be right, even at the loss of public position.

GERMANY.

Distributive co-operative societies have assumed remarkable prominence in Germany, numbering, in societies, quite as many as in England, but the pecuniary development does not yet approach the magnitude of that in the latter country. By the report of the central agency, conducted by Mr. Schulze

Delitzsch, we ascertain that, at the close of the year 1872, there were in Germany nine hundred and two such societies. The department being a voluntary one, and the societies not being required by law to make returns to the government, but one hundred and seventy of the societies forwarded statements to the central agency; the number mentioned had a membership of seventy-two thousand six hundred and twenty-two. The share capital amounted to four million one hundred and ninety thousand dollars, and the loan capital held by them was in excess of three millions of dollars. The sales of goods for that year were to the extent of nearly four millions of dollars. If the remaining stores (seven hundred and thirty-two) sold goods equalling the average of the one hundred and seventy, the total sales were in excess of nineteen millions of dollars in value.

The great growth of such societies has been since 1864, as in that year there were but ninety-seven societies, thirty-eight of which made returns; this number having seven thousand seven hundred members, a share capital of \$16,000, and a loan capital exceeding \$12,000. The receipts from the sales of goods equalled \$200,000. Five years later the number of societies was six hundred and twenty-seven; the number furnishing statements being one hundred and nine, with a membership of forty-two thousand, a share capital exceeding \$200,000, a loan capital of \$861,000; the sales for the year (1869) amounting to \$1,780,000.

It is recorded as worthy of special notice, that the late war had no injurious effect upon the societies, the capital and sales having increased in 1871 over those of 1870, and in 1872 the number of societies was seventy-five in excess of those existing in 1871, with a large addition of members.

In a letter from Mr. Schulze Delitzsch (to parties in England), dated March, 1874, is found the following:—

“The accounts of our union for the latest co-operative period (1873) have not yet come to hand, and the statistical summary of the results is being now worked out. You have seen the account of our progress up to the end of 1872, in my yearly report for 1872, which I forwarded to you at the time. Since then a great number of the new societies in all branches

of co-operation have been formed, besides loan societies and societies of consumption."

In Bavaria, twenty-one new distributive stores were organized in 1873.

In Wurtemberg a marked increase in the number of co-operative stores was made in the same year.

Baden also increased its number of societies by sixteen.

Frieburg has a society with seven hundred and twenty-eight members. The sales of goods equalled, in 1873, about \$100,000.

In Mannheim, with a population of thirty-nine thousand, the store did a business of about \$38,000, with a profit of nearly \$3,000, and devoted a portion of it to educational purposes.

In the town of Pforzheim, with a population of twenty thousand, the society has a membership exceeding one thousand. The sales for the year were \$81,000, and there was a profit of \$8,570 (being in excess of ten per cent).

In Stuttgardt, with a population of seventy-six thousand, is a society with twenty-three hundred members; the store has eight branches, and, in 1873, sold goods to the value of \$216,000.

From the foregoing, it will be seen that distributive co-operation is steadily advancing in Germany.

DENMARK.

In Denmark, there were in 1873 upwards of one hundred distributive stores, and the number is constantly being augmented. At Copenhagen they have a "General Union," which appoints agents to purchase goods at the lowest wholesale price, for distribution to the stores, they having found that purchases could more advantageously be made in that way than by each society. Within the last few years very satisfactory legislation has been had regarding the societies, which it is anticipated will contribute to the expansion of the system.

Special attention is here given to educational advancement, and, from the profits of the stores, contributions are made for the better education of the children of poor parents, who otherwise would be deprived of such facilities. Libraries are formed from the surplus, and attention is given to lec-

tures, etc. Here they have a newspaper dedicated to the objects of co-operation.

FRANCE.

Distributive co-operation does not make much of a show in this country. Mons. C. Limousin, representative of the society for promoting the study and practical development of co-operation, Paris, estimates that more co-operative societies or associations exist in the city of Paris and its environs than in the balance of the country, and but eight distributive societies are reported in Paris.

NORWAY.

In this country the distributive feature was introduced but a few years ago. We find, by a report of the English consul to his government, a record of five societies, having a membership of nearly twenty-two thousand (all heads of families). A report made in 1871 showed that a profit of nine and a half per cent on purchases was made that year. The expense of management was five and a half per cent.

ITALY.

Reports show that the system is growing in this country; many societies exist, and "the system has been found very beneficial to the people."

SWITZERLAND.

A large number of distributive societies are in operation in this country, and the number is constantly increasing. We find reference made to the existence of upwards of one hundred and ten.

In the canton of Zurich there are some fifty such societies, the largest of which, the "Zurich Co-operative Society," does an annual business of about \$300,000, and has a membership of from one thousand to twelve hundred.

The society was organized in 1851, with eight members, and a capital of about \$15. There are a large number of societies similar to our Fall River dividing stores, differing in this particular; viz., from time to time the estimate of goods required by members is made, the goods are purchased at

wholesale, sold to the members at market rates, and at the end of the year the profits are divided on the purchases.

The action of one of the cantons (Appenzell) is worthy of special attention. At times when the price of goods becomes extraordinarily high, the government of the canton assumes the position of a co-operative store and purchases the supplies required, distributing the goods among the communes, by whom they are retailed to the people at the original cost. It is stated that many manufacturers habitually pursue this course for the benefit of their operatives.

HOLLAND.

The system of distributive co-operation is also in vogue here, and seems to receive the moral support of manufacturers as well as the practical support of those immediately interested in the pecuniary gains.

From the report of Vice-Admiral Harris, made to the English government, we extract the following:—

"I have spoken of the report drawn up by a mixed committee of workingmen and employers of labor, at Arnheim, to study the question of the rate of wages in connection with a mechanic's necessary expenses, and I stated the result to which they had arrived.

"The committee state that they would recommend two methods, which together would have the effect of bringing the workman's wages into proportion with his expenses; that is to say, they would recommend a direct and an indirect increase of wages. The direct increase they propose to effect by amicable arrangement with the masters, who should be invited to follow an example recently set by one of their own number, and make a general advance of one cent ($\frac{1}{2}$ d.) per hour to begin with, issuing a circular, or notification, to all their hands to that effect. The indirect increase, they say, can be accomplished in two ways: *the one by the lowering of prices through the establishment of co-operative stores*, the other by the acquirement of greater dexterity in the performance of work."

SAXONY.

The English consul reporting to his government says: "Workingmen are fairly protected from the effects of hucksters' shops by the system of co-operative stores, which is very much extended here."

In concluding the chapter on distributive co-operation, but little remains to be added, the results as set forth in detail carrying with them ample evidence of the value of the system, particularly to those whose limited earnings demand the most economical outlay.

Two ruling desires enter into the every-day life of all: first, to secure an income commensurate with actual demands for the support of the family; second, to increase the purchasing power of the same, to enable the retention of a surplus with which to acquire the facilities for social improvement, and the purchase of such necessities of life as are now regarded, from the inability to purchase, as "luxuries."

Of the first we are led to say that the "wage system," whether founded on just and equitable principles or not, is the custom, and having existed since its adoption upon the abolition of the feudal system, a change from it to an improved system will naturally require an entire change of opinion on the part of the people of the civilized nations; and that while justice may demand such a change, it will of necessity only follow, on the part of many, after a long and earnest advocacy. Hence the wage system being recognized, it becomes a duty to look to it that there is wrought out from the accepted condition the greatest good to labor that labor is entitled to.

At this point we meet the system face to face. It is a stated sum per day, month or year, for services rendered. Should a workman receive an absolute division of all profits in a manufacturing establishment, he could have no cause of complaint against that manufactory if his proportion of the earnings failed to cover legitimate and economical expenses required for the support of his family. On the other hand, he would have every right to deprecate the universal plan

which resulted to him in hardship; or if the establishment with which he was connected was not managed advantageously, he would have an undoubted right to seek employment where successful management might make it possible for him to acquire sufficient means for his support.

As the employé does *not* receive his division of the actual profit made, and as carefully-gathered statistics show* that, by reason of the annual loss of time, he does not earn sufficient to support his family without sending his children, who should be at school, or his wife, who is needed at home, to work, to enable the income to equal the outgo, his natural feeling is, that his earnings should be greater to enable him to obviate the circumstances mentioned.

With this feeling, a request is made of the employer, the owner of the capital and manager of the industry, for an increase of wages. The employer states that it is absolutely impossible they should be increased. The alternative is readily recognized,—he can leave if he so desires, but no increased wages will be paid if he remains. We will suppose he retains his situation (the supposition that his earnings do not equal his expenses has already been made). Is he not justified, is it not a commendable act on his part, that, while he cannot dictate terms as to his wages, he *can* choose the manner and place of trade, where the greatest return is made for his outlay, thus enabling him to purchase, approximately, the same amount with his present wage, that he would of the ordinary retailer, at the increased wage?

By such an act he simply shows that his family demands are paramount to those of the retailer; he has approached as near the producer and his price as is possible, and deprived himself of the privilege of paying for his necessities of life the original price, augmented by the addition of two or three profits. He has the right to exclaim, "*Perhaps* some class of the people must support all the dealers between the producer and myself, but the poorly-paid class, to which I belong, must not be expected to do it!"

By availing himself of the opportunities referred to, he does not endorse the system which, he claims, does not reward him equitably for human power exacted; he simply begins at the

* See Part IV.

other end ; that is, makes the best use of what he does receive for his labor, trusting that the future will demonstrate the plan that will guarantee to him a pecuniary return commensurate with labor bestowed.

Distributive co-operation will help that man and others who avail themselves of it. If one purchases a barrel of flour at a co-operative store for a dollar less than one of the same quality can be bought elsewhere, he has saved the earnings of a third or half a day's work. If, as experience appears to indicate, about ten per cent can be stated as an average return to the purchaser of money paid in, on a trade of \$250 per annum \$25 is saved. This is not all, however : being a member with others, he knows that the articles he is receiving came in unbroken packages from the producer or wholesale dealer, and that they are free from adulteration by deleterious or other ingredients ; hence they will go farther. He knows, too, that he obtains full weight ; consequently his purchase will last him longer, so that he receives a substantial gain from three sources.

Believing that investigations of every character, having a bearing upon the welfare, progress, social improvement, etc., of the great mass of working people, were contemplated in the organic law constituting this bureau, this presentation has been made.

Much of the foregoing article has been compiled from material furnished us by the officers of the Rochdale Equitable Pioneer Society, of England ; from the "Co-operative News," of England ; the reports of co-operative congresses, co-operative "hand-books," and Mr. George Jacob Holyoake's "Self-Help by the People." To each and all of these we are greatly indebted for information furnished.

I N D E X.

- Abstract of English factory laws now in force, 138-141.
American families, number of, that save money, 376.
Amesbury, condition of workingmen's homes in, 391.
- Blacksmiths, earnings, condition and cost of living in families of, 253.
Boiler-maker, earnings, condition and cost of living in family of a, 254.
Books and papers, average yearly outlay for, 435.
Boot-makers, earnings, condition and cost of living in families of, 240, 241.
Boots and shoes, expenditure in workingmen's families for, 428-431.
 shoes and leather, *skilled*, earnings, condition and cost of living in families of workers in, 240-253.
Bricklayers, earnings, condition and cost of living in families of, 221.
Building trades, *skilled*, earnings, condition and cost of living in families of, 221-239.
- Cabinet-maker, earnings, condition and cost of living in family of a, 342.
Capital, domination of, 41, 42.
Carpenters, earnings, condition and cost of living in families of, 221-236.
Carriage painter, earnings, condition and cost of living in family of a, 343.
 smith, earnings, condition and cost of living in family of a, 343.
 trimmer, earnings, condition and cost of living in family of a, 344.
Charity, average yearly outlay for, 435.
Child labor, a violation of the organic law of production, 339.
 extent of, in unskilled employments, 362.
 skilled employments, 362.
 its reward or wage, 54-56.
 lessening of, in England and other European countries, 56.
 money value of, compared with that of adults, 370, 371.
 physical degeneracy induced by, 52-54.
- Children, acts relating to the education and employment of, in England, 11-18.
 ages and sex of working, 363-366.
 at home, at school and at work, 366, 367.
 compulsory school attendance of, recommended, 61.
 considerations regarding the education and employment of, 37-63.
 disregard of the law respecting school attendance of, 75, 76.
 employed in manufacturing establishments, resolve of Massachusetts legislature regarding a plan for the education of, 3.
 first English law distinguishing between young persons and, 121.
 in Cambridge, extent of truancy among, 48.
 England, reduction of the working day to eight hours for, 121.
 Lynn, number not attending school, 48.
 Massachusetts, without knowledge of the rudiments of education, number of, 5.

- Children, in Prussia and Switzerland, per cent attending school, 48.
 involved in disaster at Granite Mill, statements regarding, 146-151.
 laws relating to the education and employment of, in Prussia, 24-28.
 no right in mills, 179, 180.
 number of, in Prussia, of school age, 25.
 of mill operatives forced to grow up in ignorance, 45-47.
 Prussia, percentage receiving instruction, 25.
 workmen, average earnings of, 361-366.
 percentage of, not attending school, 47.
 proportion of earnings supplied by, 369-371.
 should have no legal status as workers, 60, 61.
- Cigar-makers, earnings, condition and cost of living in families of, 344, 345.
- Civil Service Supply Association, London, description of the, 478-481.
- Clothing, expenditure in workmen's families for, 428-431.
 of workmen's families, summary of results concerning, 432, 433.
- Cost of living of workmen's families, 354-385.
 summary of results concerning, 384, 385.
- Crime, increasing prevalence of, 42, 43.
- Carrier, earnings, condition and cost of living in family of a, 241.
- Cutlers, earnings, condition and cost of living in families of, 254, 255.
- Corporation boarding-houses, manner of living in, 418-421.
- Co-operation, advantages and possibilities of the system of, 488-490.
 distributive, 455-490.
 and productive, 453, 454.
 facts respecting, in Fall River, 456-459.
 Worcester, 459.
 New Bedford, 460.
 Lynn, 460.
 Wakefield, 460.
 Holyoke, 460.
 Gardner, 461.
 Natick, 461.
- in France, 486.
 Holland, 487.
 Italy, 486.
 Norway, 486.
 Saxony, 488.
 Switzerland, 486, 487.
 the London Civil Service Supply Association, 478-481.
- Co-operative associations, distributive, in Massachusetts, 455-461.
 Institute of London, England, 481-483.
 societies in Denmark, 485.
 England, 464-483.
 Germany, 483-485.
 organized in England between 1848 and 1873, description of, 475-478.
- Day-workers, health of piece-workers compared with, 82, 83.
- Debt, per cent of families in different parts of Massachusetts in, 382.
 surplus of, of workmen's families, 374-383.
- Denmark, co-operation in, 485.
- Dress, comparative styles of American and Swiss workmen, 430.
 working-women, 431.
 working-children, 432.
- Dressers in mills, earnings, condition and cost of living in families of, 279.
- Drunkenness, tendency of education to lessen, 43.
- Dry goods, expenditure in workmen's families for, 428-431.

- Earnings, conclusions regarding, 442.**
 connection between expenses and, 355.
 of children of workingmen, 361-366.
 fathers, wives and children, average of combined, 368, 369.
 wives of workingmen, 360, 361.
 workingmen, average, 358, 359.
 per cent of children's, 371.
 wives', 371.
 relative proportion supplied by fathers, wives and children, 369-371.
 the sources from which derived, and the amount furnished by various
 classes of workers, 357-371.
- Economic law, general principles of, as propounded by Dr. Engel, 438.**
- Education and labor of the young, considerations regarding, 37-63.**
 compulsory, outline of a bill for enforcing, 61-63.
 in Massachusetts, compulsory in theory, but not in fact, 40.
 New England, report of British commissioner upon, 48-50.
 Prussia, and laws relating thereto, 24-28.
 its tendency to lessen crime, 42, 43.
 its tendency to lessen drunkenness, 43.
 more generally diffused in some other countries than in Massachusetts,
 45-48.
 number of children in Massachusetts without the knowledge of the rudiments of, 5.
 of children employed in manufacturing establishments, resolve of the
 Massachusetts legislature, 1874, regarding a plan for, 3.
- Employments demanding unremitting attention injurious to young females, 77, 78.**
 of girls under conditions unfavorable to health, 79-81.
 women in money-counting, injurious, 102-104.
 sewing-machine labor, injurious, 98-101.
 telegraphy, injurious, 94-98.
 the manufacture of textile fabrics, injurious, 81-88.
 tobacco manufacture, effects of, 105-107.
 type-setting, injurious, 83-93.
 suggestions respecting, 107-112.
 in which are found the most potent causes of sexual derangement,
 87-107.
 standing, its effect upon female health, 104, 105.
- Engel, Dr., of Prussia, general principles of an economic law, 438.**
- Engine-builder, earnings, condition and cost of living in family of an, 255.**
- England, acts relating to the education and employment of children in, 11-18.**
 beginning of the factory system in, 7-11.
 co operative societies formed in, from 1848 to 1873, 475-478.
 co-operative societies in, 464-483.
 half-time schools in, 5, 6.
 illiteracy in, 19, 20.
 number of half-time schools in, 22.
- English factory acts of 1833-56, amended by acts of 1874, now in force, 138-141.**
 legislation, chronological history of, 115-142.
 families, number of, that save money, 376.
 relay system for children, 120, 121, 123.
 ten-hour bill of 1847, 127, 128.
- Errors affecting young growing girls in their employments, 71-81.**
- Expenditure, percentages of, as regards fathers, "alone" and "assisted," 439.**
 income, 441.
 skilled and unskilled labor, 440.
- Expense for food, yearly average, 414, 415.**
 of fuel in workingmen's families, 410-412.

- Expenses of workingmen's families, 372-374.
 and earnings of workingmen's families, summary of results concerning, 384, 385.
 conclusions regarding, 443.
 sundry, of workingmen, 433-437.
- Factories, cotton, effects of dust in, 85.
 ventilation in, 86, 87.
- Factory act, outline for a, 186, 187.
 proposed, 186, 187.
 acts, English, in force in 1875, abstract of, 133-141.
 employes, remarks concerning death-rate and health of, 84, 85.
 inspection, system of, proposed, 184, 185.
 labor, contrast with house-work, 82.
 the injurious element-in, 74, 75.
 legislation, 115-187.
 does Massachusetts require a system of, 177-187.
 English, beneficial influence on workingmen and masters, exerted by, 141.
 chronological history of, 115-142.
 life, special diseases incident to, 84.
 system, beginning of, in England, 7-11.
- Fall River, Barlow dividing store in, 459.
 Workingmen's Co-operative Association of, 456-459.
- Families in debt, per cent in different parts of Mass., 332.
 of workingmen, individual presentation of the condition of, 218-354.
 "worst-conditioned," table of, 381.
- Family surplus or savings, table of, 379.
- Fathers' surplus or savings, table of, 378.
- Female health, effect of tobacco manufacture upon, 105-107.
 effects of standing at work upon, 104, 105.
 money-counting injurious to, 102-104.
 sewing-machine labor injurious to, 98-101.
 special effects of certain forms of employment upon, 67-112.
 suggestions respecting the effect of employment upon, 107-112.
 telegraphy injurious to, 94-98.
 the manufacture of textile fabrics injurious to, 81-83.
 type-setting injurious to, 88-93.
 operatives, questions regarding injury to the health of, 68.
 the class most injuriously affected by industrial pursuits, 70.
- Females, causes of functional disturbance produced in immature, 72.
- Female working-people, influences that affect the peculiar functions of, 69-81.
- Fishermen, earnings, condition and cost of living in families of, 306, 307.
- Food in foreign countries, 422-428.
 of workingmen in Austria, 422.
 Belgium, 422.
 Brazil, 422.
 Colombia, 422.
 Denmark, 422.
 Egypt, 423.
 England, 423.
 France, 423.
 Germany, 423.
 Greece, 423.
 Italy, 423, 424.
 Morocco, 424.
 Persia, 424.

- Food of workmen in Portugal, 424, 425.
 Russia, 425.
 Saxe Coburg, 425.
 Saxony, 425.
 Spain, 425, 426.
 Sweden, 426.
 Switzerland, 426.
 Tripoli, 426.
 Turkey, 426-428.
 Uruguay, 428.
 Venezuela, 428.
 other states of the Union, 421.
 workmen's families, 412-428.
 summary of results concerning, 428.
 yearly average expenditure for, 414, 415.
- France, co-operation in, 486.
- Frazer, Rev. James, statement upon the public school system of America, 48-50.
- Fuel, average yearly cost of, 411.
- Furniture and carpets, average yearly outlay for, 435.
- Furniture-maker, earnings, condition and cost of living in family of a, 345.
- Gardner, Sovereigns Co-operative Association of, 461.
- German families, number of, that save money, 376.
- Germany, description of distributive co-operative societies in, 483-485.
- Girls, employment of, before their vital functions are completely established, 75-77.
 errors of employment that induce serious results to, 71-81.
 put to work at too early an age, 73-75.
 their employment under conditions unfavorable to health, 79-81.
 their employment in occupations injurious to health, 77, 78.
- Granite Mill No. 1 at Fall River, means of escape in, 143, 144, 145, 152.
 Mills, statements concerning operatives involved in disaster at, 146-151.
 the disaster at, 142-151.
- Half-time and Factory Schools of Massachusetts, 28-37.
 schools, number of, in England, 22.
 system of, simply a makeshift, 60.
 their tendency to perpetuate class distinctions, 57-59.
- Hatters, earnings, condition and cost of living in families of, 345, 346.
- Haverhill, condition of workmen's homes in, 391, 392.
- Health, female, special effects of certain forms of employment upon, 67-112.
- Holland, co-operation in, 487.
- Holyoke, condition of workmen's homes in, 392.
 Co-operative Association of, 460.
- Homes of workmen in Massachusetts, condition of, 389-393.
 other states of the Union, condition of, 393-395.
 foreign countries, condition of, 395-409.
 sanitary condition of, 389, 390.
 summary of results concerning, 409, 410.
- Hours of labor for working people, 180, 181.
- House, care of, average yearly outlay for, 435.
 girl, average yearly outlay for, 435.
- Illiteracy in England, 19, 20.
- Income and relative surplus, table of gradations of, 380.
- Industries presumed to specially affect the health of female operatives, 78.
- Inspectors of factories, a suggestion concerning the appointment of, 184, 185.
- Irish families, number of, that save money, 376.

- Iron-moulders, earnings, condition and cost of living in families of, 256.
 rollers, earnings, condition and cost of living in families of, 257, 258.
 worker, earnings, condition and cost of living in family of an, 258.
- Italy, co-operation in, 486.
- Jewellers, earnings, condition and cost of living in families of, 258, 259.
- Labor, rightful remuneration of workmen reduced by that of working-children, 364.
- Laborer, in blanket-mill, earnings, condition and cost of living in family of a, 304.
 carriage-shop, earnings, condition and cost of living in family of a, 351.
 paper-mill, earnings, condition and cost of living in family of a, 304.
 print-works, earnings, condition and cost of living in family of a, 304.
 rolling-mill, earnings, condition and cost of living in family of a, 279.
 shipyard, earnings, condition and cost of living in family of a, 336.
 whip-factory, earnings, condition and cost of living in family of a, 354.
- Laborers, for builders, earnings, condition and cost of living in families of, 307, 308.
 in cutlery-works, earnings, condition and cost of living in families of, 273, 274.
 iron-works, earnings, condition and cost of living in families of, 274, 275.
 machine-shop, earnings, condition and cost of living in families of, 276-278.
 mill, earnings, condition and cost of living in families of, 291-303.
 shop, earnings, condition and cost of living in families of, 351-353.
 on streets, earnings, condition and cost of living in families of, 336, 337.
 wharf, earnings, condition and cost of living in families of, 337-339.
 out-door, earnings, condition and cost of living in families of, 309-336.
- Lawrence, manner of living in corporation boarding-houses in, 418-421.
- Life insurance, average yearly outlay for, 435.
- London Civil Service Supply Association, description of the, 478-481.
 Co-operative Institute, 481-483.
- Lynn, Howard Co-operative Company of, 460.
- Machinists, earnings, condition and cost of living in families of, 259-272.
- Manner of living, conclusions regarding, 443, 444.
 in Massachusetts and Switzerland, 417, 418.
- Married women, employment of, in mills, 183, 184.
- Masons, earnings, condition and cost of living in families of, 236, 237.
- Massachusetts, comparative manner of living in Switzerland and, 417, 418.
 condition of workmen's families in, 191-450.
 distributive co-operative associations in, 455-461.
 education in, compulsory in theory, but not in fact, 40.
 half-time and factory schools of, 28-37.
 schools of, 5, 6.
 is a system of factory legislation required in, 177-187.
 number of wage-laborers in, 210.
 per cent of families in debt in different parts of, 382.
 size of workmen's families in, 203-215.
 statistics regarding upper stories of mills in, 152-177.
 table of "worst-conditioned" families in different parts of, 381.
- Means of escape from upper stories of mills in Massachusetts, tabular statistics regarding, 153-177.
- Meat in workmen's families, consumption of, 416.
- Mechanics, earnings, condition and cost of living in families of, 346-348.
- Metal-workers, *skilled*, earnings, condition and cost of living in families of, 253-273.
unskilled, earnings, condition and cost of living in families of, 273-279.
- Mill-hands, earnings, condition and cost of living in families of, 280.

Mill operatives, *overscers*, earnings, condition and cost of living in families of, 305, 306.

skilled, earnings, condition and cost of living in families of, 279-290.

unskilled, earnings, condition and cost of living in families of, 291-304.

Mills in Massachusetts, means of escape from upper stories of:

In Amesbury, 153.

Andover, 153.

Athol, 153, 154.

Attleborough, 154.

Ballardvale, 154.

Barre, 154.

Blackstone, 154.

Braintree, 154.

Boylston, 155.

Canton, 155.

Clinton, 155.

Chicopee, 155.

Cordaville, 155.

Dracut, 155.

Easthampton, 155, 156.

Enfield, 156.

Fall River, 156-161.

Farnumsville, 161.

Fitchburg, 161.

Florence, 161.

Gilbertville, 161.

Grafton, 161, 162.

Great Barrington, 162.

Griswoldville, 162.

Haydenville, 162.

Hinsdale, 162.

Holyoke, 162, 163.

Holden, 163.

Indian Orchard, 163.

Ipswich, 164.

Lawrence, 164, 165.

Lowell, 165-168.

Methuen, 168.

Middleborough, 168.

Millbury, 168, 169.

Needham, 169.

New Bedford, 169.

Newburyport, 170.

Newton, 170.

North Andover, 170.

Norfolk, 171.

Northbridge, 171.

North Chelmsford, 171.

Oakdale, 171.

Pittsfield, 171, 172.

Plymouth, 172.

Salem, 172.

Shattuckville, 172.

Shirley, 172.

South Adams, 172, 173.

Southbridge, 173.

Mills in Massachusetts, means of escape from upper stories of:

In South Hadley, 173.
 South Fitchburg, 173.
 Sutton, 174.
 Taunton, 174.
 Templeton, 174.
 Thorndike, 174.
 Three Rivers, 174.
 Uxbridge, 174, 175.
 Wales, 175.
 Ware, 175.
 Watertown, 175.
 Webster, 175.
 West Boylston, 176.
 West Chelmsford, 176.
 West Springfield, 176.
 West Warren, 176.
 Whitinsville, 176.
 Winchendon, 176.
 Worcester, 176, 177.

Massachusetts, statistics regarding upper stories of, 152-177.

Minimum wage, recommendation of a, 447-449.

Morocco-dressers, earnings, condition and cost of living in families of, 241, 242.

Nail-maker, earnings, condition and cost of living in family of a, 273.

Natick, Co-operative Grocery Store of, 461.

Nationality of workingmen, the condition of whose families was investigated, 214-218.

New Bedford, Acushnet Co-operative Association of, 460.

Newburyport, condition of workingmen's homes in, 392, 393.

Norway, co-operation in, 486.

Occupations of workingmen, the condition of whose families was investigated, 210-214.

Operatives, means of escape of, from upper stories of mills in Massachusetts, 153-177.

Operatives, protection of, from dangerous machinery, 181-183.

Out-door employments, *unskilled*, earnings, condition and cost of living of families representing, 306-342.

Overseers in mill, earnings, condition and cost of living in families of, 305, 306.

Painters, earnings, condition and cost of living in families of, 238.

Parents, care of, average yearly outlay for, 435.

Piece-workers, health of, compared with that of day-workers, 82, 83.

Places in which the condition of workingmen's families was investigated, 203-210.

Plasterers, earnings, condition and cost of living in families of, 238, 239.

Prussia, percentage of children receiving instruction in, 25.

the state of education, and laws relating thereto, 24-28.

Quarrymen, earnings, condition and cost of living in families of, 329.

Recreation, average yearly outlay for, 435.

Relay system for children, one of the principal features in English factory labor, 120, 121, 128.

Religion, average yearly outlay for, 435.

Rents and rooms, gradations of, 387.

Rents, as regards fathers, "alone" or "assisted," table of percentages paid for, 388.
 kind of labor, table of percentages paid for, 388.

of workingmen, 385-389.

- Rochdale Equitable Pioneer Society, description of the, 467-475.
 Rooms and rents, gradations of, 387.
- Sanitary condition of workmen's homes, 389, 390.
- Savings, conclusions regarding, 444, 445.
 or surplus, table of average yearly, 376, 377.
 family, 379.
 fathers', 378.
- Saxony, co-operation in, 488.
- School attendance of factory children in England, 116, 121, 126, 127, 140.
- Schools, half-time and factory, of Massachusetts, 28-37.
 in England, 5, 6.
 Massachusetts, 5, 6.
 system of, in England, 12-24.
 their tendency to perpetuate class distinctions, 57-59.
 in Prussia, number of children in public elementary, 25.
 Rev. Jas. Frazer's statement on the public school system of America, 48-50.
- Scotch families, number of, that save money, 376.
- Section-hands in mill, earnings, condition and cost of living in families of, 280-284.
- Sexual derangement, the most potent causes of, 87.
- Ship-carpenter, earnings, condition and cost of living in family of a, 239.
- Shoe-channeller, earnings, condition and cost of living in family of a, 242.
 cutters, earnings, condition and cost of living in families of, 242, 243.
 lasters, earnings, condition and cost of living in families of, 243, 244.
 makers, earnings, condition and cost of living in families of, 245-252.
 trimmers, earnings, condition and cost of living in families of, 244, 245.
- Shop-trades, *skilled*, earnings, condition and cost of living in families representing, 342-350.
 unskilled, earnings, condition and cost of living in families representing, 351-354.
- Shoremen (fishermen), earnings, condition and cost of living in families of, 340.
- Sickness, average yearly outlay for, 435.
- Size of workmen's families in Massachusetts, 203-215.
- Slasher in mill, earnings, condition and cost of living in family of a, 287.
- Societies, average yearly outlay for, 435.
- Spare hand in mill, earnings, condition and cost of living in family of a, 287.
- Spinners, earnings, condition and cost of living in families of, 284-286.
- Stair-builder, earnings, condition and cost of living in family of a, 239.
- Stone-cutters, earnings, condition and cost of living in families of, 349.
- Suffrage a blessing only when educated, 44, 45.
 its extension to women, 40, 41.
- Sundry expenses, summary of results concerning, 437.
- Surplus or debt of workmen's families, 374-383.
 savings, table of average yearly, 376, 377.
- Switzerland, co-operation in, 486, 487.
- Tanner, earnings, condition and cost of living in family of a, 253.
- Teamsters, earnings, condition and cost of living in families of, 340-342.
- Tenements, average size of workmen's, 389, 390.
- Ten-hour law, English, of 1847, 127, 128.
- Tobacco manufacture, investigations in Massachusetts concerning, 106, 107.
- Travel to work, average yearly outlay for, 435.
- Ventilation in factories, 86, 87.
 mills should be secured, 182.
- Wage-laborers, number of, in Massachusetts, 210.
 results regarding earnings, expenses, manner of living and savings of, 442-445.

- Wages and earnings, explanation concerning, 191, 192.
- Wage-system, recommendations concerning the, 446-450.
 what it does, 446.
 that is weak and criminal, 446.
 fails to do, 446.
- Wakefield, South Reading Co-operative Association of, 460.
- Watchmaker, earnings, condition and cost of living in family of a, 273.
- Weavers, earnings, condition and cost of living in families of, 287-290.
- Westfield, condition of workmen's homes in, 393.
- Whip-makers, earnings, condition and cost of living in families of, 350.
- Wife labor, per cent of earnings of, 371.
- Wives of workmen, benefits of home labor of, 361.
 earnings of, 360, 361.
- Women, employment of, suggestions in regard to, 107-112.
 extension of suffrage to, 40, 41.
 injury from certain industrial pursuits to society and, 69, 70.
- Worcester, Co-operative Grocery and Provision Store of, 459.
- Workers in Massachusetts, number and per cent of, according to U. S. Census of 1870, 369.
- Workmen, American and Swiss, comparative styles of dress of, 430.
 average earnings of, 358, 359.
 surplus of earnings in families of, 377.
 earnings, condition and cost of living in families of,—
 Blacksmiths, 253.
 Boiler-maker, 254.
 Boot-makers, 240, 241.
 Bricklayers, 221.
 Cabinet-maker, 342.
 Carpenters, 221-236.
 Carriage-painter, 343.
 smith, 343.
 trimmer, 344.
 Cigar-makers, 344, 345.
 Currier, 241.
 Cutlers, 254, 255.
 Dressers in mill, 279.
 Engine-builder, 255.
 Fishermen, 306, 307.
 Furniture-maker, 345.
 Hatters, 345, 346.
 Iron-moulders, 256.
 rollers, 257, 258.
 worker, 258.
 Jewellers, 258, 259.
- Laborers, for builders, 307, 308.
 in carriage-shop, 351.
 cutlery-works, 273, 274.
 iron-works, 274, 275.
 machine-shop, 276-278.
 mill, 291-303.
 blanket-mill, 304.
 paper-mill, 304.
 print-works, 304.
 rolling-mill, 279.
 shipyard, 336.
 shop, 351-353.
 on streets, 336, 337.

- Workingmen, Laborers, on wharf, 337-339.**
 out-door, 309-336.
 in whip-factory, 354.
Machinists, 259-272.
Masons, 236, 237.
Mechanics, 346-348.
Mill-hands, 280.
Morocco-dressers, 241, 242.
Nail-maker, 273.
Overseers in mill, 305, 306.
Painters, 238.
Plasterers, 238, 239.
Quarrymen, 339.
Section-hands in mill, 280-284.
Ship-carpenter, 239.
Shoe-channeller, 242.
 cutters, 242, 243.
 lasters, 243, 244.
 trimmers, 244, 245.
 makers, 245-252.
Shoremen (fishermen), 340.
Slasher in mill, 287.
Spare hand in mill, 287.
Spinners, 284-286.
Stair-builder, 239.
Stone-cutters, 349.
Tanner, 253.
Teamsters, 340-342.
Watchmaker, 273.
Weavers, 287-290.
Whip-makers, 350.
 earnings of, 357-371.
 individual presentation of the condition of families of, 218-354.
 family expenses of, 372-374.
 in Massachusetts, quantity of fuel used yearly by, 412.
 per cent owning houses in which they live, 386.
 relying or depending upon labor of wife or children for support of families, number of, 357, 358.
 rightful remuneration of their labor reduced by that of working children, 364.
 summary of the financial status of, 374-376.
 supporting their families by their individual earnings, number of, 357, 358.
 table of average highest and lowest yearly rents of, 385, 386.
Workingmen's earnings and expenses, summary of results concerning, 384, 385.
 expenses, lessened by home labor of wife, 360, 361.
 summary of results concerning percentages of, 441, 442.
 families, average yearly outlay for specified sundries, 435.
 consumption of meat in, 416.
 condition of, 191-450.
 cost of living of, 354-385.
 expenditure for food in, 414, 415.
 expense of fuel in, 410-412.
 extent of investigations (and their representative value) into the condition of, 200-218.
 food of, 412-428.

- Workingmen's families having pianos or organs, sewing-machines, carpeted rooms,
 pews in church, 436.
 method of agents in obtaining information concerning, 219.
 per cent of earnings contributed by child labor in, 371.
 size of, in Massachusetts, 203-215.
 summary of results concerning sundry expenses of, 437.
 summary of results concerning the clothing of, 432, 433.
 sundry expenses of, in past years, 436.
 surplus or debt of, 374-383.
 yearly average expenditure for boots and shoes, dry goods
 and clothing, 428-431.
 food in other states of the Union, 421.
 summary of results concerning, 428.
 homes, condition of, in Amesbury, 391.
 Haverhill, 391, 392.
 Holyoke, 392.
 Newburyport, 392, 393.
 Westfield, 393.
 California, 393.
 Louisiana, 393, 394.
 Maine and New Hampshire, 394.
 New York, 394.
 Pennsylvania, 395.
 Georgia, 395.
 Texas, 395.
 Austria, 395.
 Belgium, 395, 396.
 Brazil, 397.
 New Granada, 397.
 Denmark, 397.
 England, 397.
 Egypt, 397, 398.
 France, 398-400.
 Greece, 400.
 Italy, 400-402.
 Morocco, 402.
 Navigator's Islands, 402.
 Netherlands, 402.
 Norway, 402, 403.
 Persia, 403.
 Peru, 404.
 Portugal, 404.
 Prussia, 404.
 Russia, 404, 405.
 Saxe Coburg, 405.
 Saxony, 405.
 Spain, 406.
 Sweden, 406, 407.
 Switzerland, 407.
 Tripoli, 407.
 Turkey, 407-409.
 Uruguay, 409.
 Venezuela, 409.
 in Massachusetts, condition of, 389-393.
 other states of the Union, condition of, 393-395.
 foreign countries, condition of, 395-409.
 sanitary condition of, 389, 390.

Workingmen's homes, summary of results concerning, 409, 410.

savings, comparative statement of:

In Denmark, 382.

England, 382.

France, 382.

Germany, 382.

Massachusetts, 382.

Pennsylvania, 382.

Russia, 382.

Scotland, 382.

Sicily, 382.

Spain, 382.

Sweden, 382.

Switzerland, 382.

Tunis (Africa), 382.

Turkey, 382.

sundry expenses, 433-437.

yearly average of, 434.

tenements, average size of, 389, 390.

Working-women, American and Swiss, comparative styles of dress of, 431.

children, American and Swiss, comparative styles of dress of, 432.

Workmen, *skilled*, per cent able, individually, to provide for their families, 358.

***unskilled*, per cent able, individually, to provide for their families, 358.**

***skilled*, proportion saving money, 376.**

***unskilled*, proportion saving money, 376.**

Young persons, first English law making a distinction between children and, 121.

Young, statement of Mr. Simon respecting the mortality of the, 72.



Commonwealth of Massachusetts.

ABSTRACT

OF

WILLS PROVED AND LETTERS OF
ADMINISTRATION GRANTED

IN THE

Probate Courts of the several Counties of the Commonwealth,

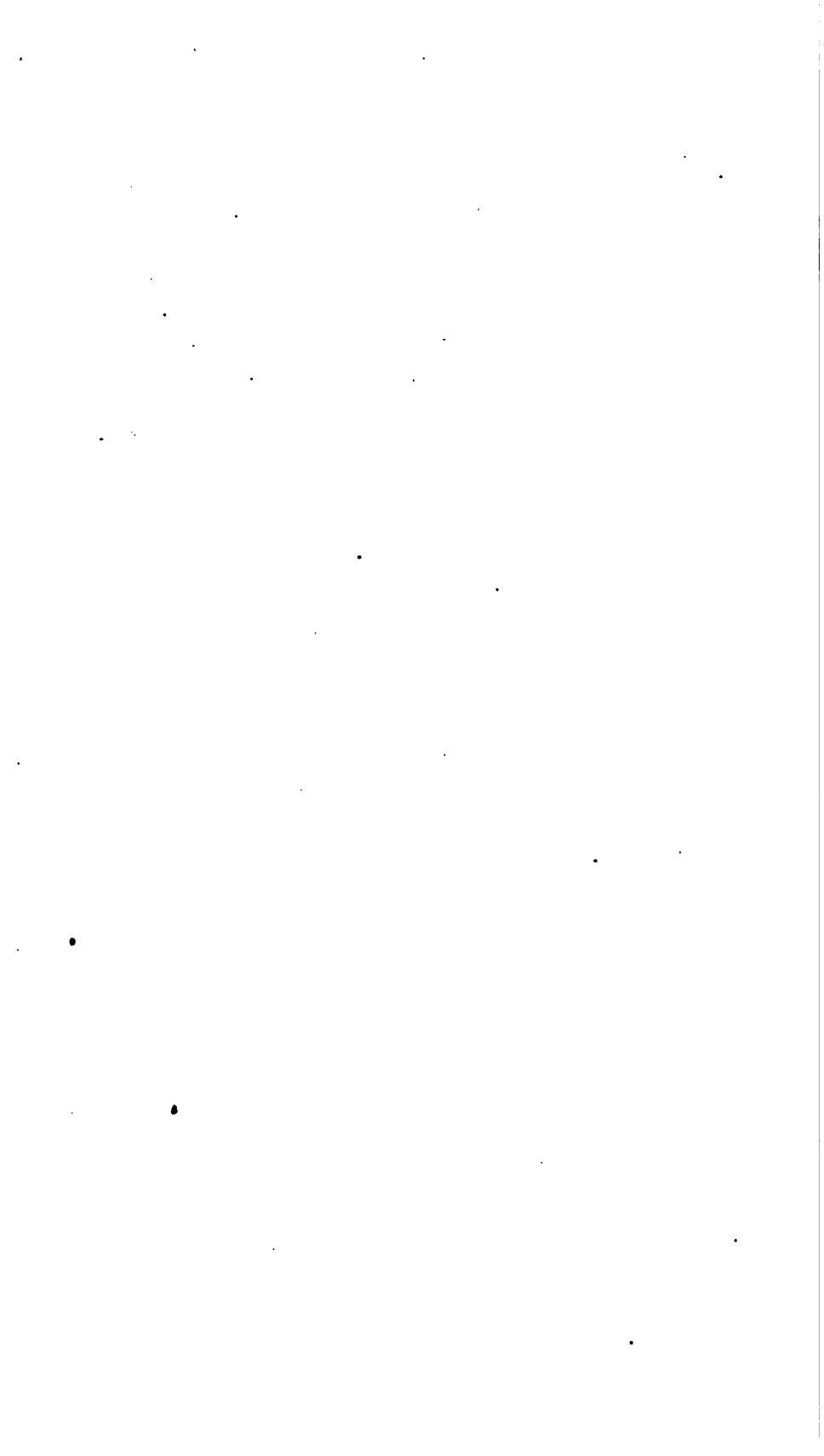
FOR THE FIVE YEARS ENDING SEPT. 30, 1874.

COMPILED FROM THE RETURNS OF THE REGISTERS OF PROBATE,
WITH REMARKS AND SUGGESTIONS OF VARIOUS
JUDGES OF SAID COURTS.

PREPARED BY THE SECRETARY OF THE COMMONWEALTH,
IN CONFORMITY WITH CHAPTER 77 OF THE RESOLVES OF 1874.

BOSTON:
WRIGHT & POTTER, STATE PRINTERS,
79 MILK STREET (CORNER OF FEDERAL).

1875.



Commonwealth of Massachusetts.

[CHAP. 77.]

RESOLVE

For obtaining Information with reference to the Expediency of a Change in the Laws regulating the Distribution of Intestate Estates.

Resolved, That the registers of the several probate courts in this Commonwealth make a special return to the secretary of the Commonwealth, of the number of wills proved, and also of the number of letters of administration granted, in the respective courts, in each year for the five years ending on the thirtieth day of September next; and that each of the judges of said courts be, and he hereby is, requested to transmit to the secretary of the Commonwealth, at the same time, his opinion, in writing, whether any, and if any, what changes are expedient in the existing provisions of law regulating the distribution of the estates of persons dying intestate, pointing out such changes, if any, as he may deem expedient, particularly with reference to the case of the estates of such persons leaving no issue.

Resolved, That as soon as may be after the passage of this resolve, the secretary of the Commonwealth shall transmit a copy thereof to each of the judges and registers of the probate courts; and shall again transmit copies to the same officers on or about the fifteenth day of October; and that the said secretary shall cause such communications as he may receive from the several judges and registers prior to the first day of December, to be printed as a document of the public series, to be laid before the next general court; and that a sufficient number of copies be printed to allow the secretary to transmit one to each member of the present legislature, in addition to the distribution of such documents now prescribed by law. [Approved June 25, 1874.]



Commonwealth of Massachusetts.

SECRETARY'S DEPARTMENT,
BOSTON, January 5, 1875. }

To the Honorable Senate and House of Representatives.

In conformity with the foregoing Resolve, I submit the returns of the Registers of the several probate courts, tabulated in convenient form, to which will be found appended remarks and suggestions from several of the judges of said courts.

Very respectfully,

OLIVER WARNER,
Secretary.

ABSTRACT OF WILLS PROVED AND LETTERS OF ADMINISTRATION GRANTED in the several Counties of the Commonwealth of Massachusetts for the Five Years ending September 30, 1874, arranged by Counties.

COUNTIES.	WILLS.						LETTERS OF ADMINISTRATION.					
	1870.	1871.	1872.	1873.	1874.	Total.	1870.	1871.	1872.	1873.	1874.	Total.
Barnstable,	55	61	67	67	62	312	81	90	89	88	96	444
Berkshire,	70	73	87	81	86	397	79	73	84	95	109	440
Bristol,	112	111	145	148	167	688	179	197	195	247	277	1,095
Dukes,	7	7	6	11	10	41	2	16	24	11	18	71
Essex,	211	253	260	318	291	1,388	329	424	440	462	553	2,208
Franklin,	67	82	57	66	57	328	171	160	169	185	97	782
Hampden,	91	93	80	124	96	484	125	136	128	152	184	675
Hampshire,	86	71	87	75	80	399	82	62	73	81	122	420
Middlesex,	262	304	350	387	321	1,624	447	476	539	594	561	2,617
Nantucket,	17	11	12	21	14	75	21	8	8	14	6	57
Norfolk,	122	135	125	140	75	597	202	163	198	190	124	877
Plymouth,	99	118	114	120	127	578	145	147	154	183	190	819
Suffolk,	223	277	316	341	361	1,518	408	514	560	668	704	2,849
Worcester,	237	272	265	317	268	1,349	358	360	420	427	447	2,012
Totals,	1,659	1,868	1,961	2,215	2,015	9,718	2,624	2,826	3,081	3,397	3,438	16,966

REMARKS.

By an inspection of the foregoing tables it will be seen that there was a steady increase in the number of Wills proved in each year under consideration until 1873; but in the year 1874 there was a perceptible decrease.

The number of Letters of Administration exceeds the number of Wills during the period under consideration, in each of the counties, in a uniform ratio, if we except Nantucket, where there was a decrease, there being seventy-five wills proved and only fifty-one letters granted.

Below may be seen a comparative table of the percentage of wills proved and letters granted, according to the population, by counties, according to the United States census of 1874.

COUNTIES.	Population, 1870.	Number of Wills.	Per cent.	Number of Letters.	Per cent.
Barnstable,	32,774	312	.09	444	.14
Berkshire,	64,826	397	.06	440	.07
Bristol,	102,886	683	.06	1,095	.11
Dukes,	3,787	41	.11	71	.19
Essex,	200,843	1,333	.06	2,208	.11
Franklin,	32,635	328	.10	782	.24
Hampden,	78,409	484	.06	675	.09
Hampshire,	44,388	399	.09	420	.09
Middlesex,	274,353	1,624	.06	2,617	.09
Nantucket,	4,123	75	.18	57	.13
Norfolk,	89,443	597	.06	877	.09
Plymouth,	65,365	578	.09	819	.13
Suffolk,	270,802	1,518	.05	2,849	.10
Worcester,	192,718	1,349	.06	2,012	.10
Totals,	1,457,352	9,718	.07	15,366	.10

By these figures it will be seen that the county of Franklin takes the lead in the probate business before the courts, over any other county, according to its population, while the county of Berkshire expresses the lowest rate.

In the former the wills represent ten-hundredths of one per cent., and the letters of administration twenty-four one-hundredths of one per cent.; and in the latter county the rate for wills is six one-hundredths, and the letters seven

one-hundredths of one per cent.,—the average rate for the State at large being seven one-hundredths for wills and ten one-hundredths for letters of administration.

By turning to the XXXIInd Registration Report of Massachusetts for 1873, we find the death-rate expressed by counties on the 29th page of summary observations, giving the number of deaths to 100 persons living in Franklin County, one and seventy-four one-hundredths; and in Berkshire, one and seventy-one one-hundredths; while in the State at large the rate is found to be two and thirty-two one-hundredths to 100 persons living. This does not quite account for the disparity in these counties, and the difference would seem to be found in the custom of the people in attending to the settlement of estates with a greater degree of attention and punctuality by not leaving estates to settle themselves.

SUGGESTIONS OF JUDGES OF PROBATE COURTS.

BARNSTABLE COUNTY.

BARNSTABLE, MASS., Nov. 25, 1874.

HON. OLIVER WARNER, *Secretary of the Commonwealth*:

DEAR SIR:—I submit the following as changes, in my opinion expedient, in the existing provisions of law regulating the distribution of the estates of persons dying intestate and without issue:—

First. That clause second of chapter 91, General Statutes, be so amended, as that the mother shall share equally with the father.

Second. That clause third of chapter 91, General Statutes, be so amended, as that if the intestate leaves neither issue nor father, the mother shall take, to exclusion of brothers and sisters.

Third. That clause sixth, chapter 94 of General Statutes, be so amended, as that if the intestate leaves a widow and no issue, the widow shall be entitled to all the residue.

I feel sure that, in my own county, substantial justice to all would be more nearly secured, through the above changes, than it is under the present rules of distribution of intestate estates.

Very respectfully your obedient servant,

JOSEPH M. DAY,
Judge of Probate for Barnstable County.

BERKSHIRE COUNTY.

NORTH ADAMS, Oct. 27, 1874.

HON. OLIVER WARNER:

DEAR SIR:—I send you the inclosed, in compliance with the statute. I do not desire to make any suggestions, at present, concerning changes in the laws.

Truly yours,

J. T. ROBINSON.

DUKES COUNTY.

. EDGARTOWN, MASS., Dec. 5, 1874.

Hon. OLIVER WARNER, *Secretary, &c.*:

SIR:—Referring to chapter 77 of the Resolves of 1874, I have to suggest the propriety of so changing the statutes that, when a man dies, leaving a wife and no issue, that his real estate, or a portion thereof, should descend to her.

I am, very respectfully, yours,

JOSEPH T. PEASE.

HAMPDEN COUNTY.

. SPRINGFIELD, MASS., Sept. 30, 1874.

Hon. OLIVER WARNER, *Secretary of the Commonwealth*:

DEAR SIR:—In answer to your Circular as to Resolve, chapter 77 of 1873-4, I have to reply that I have no suggestion to make as to the expediency of changing "any of the existing provisions of law regulating the distribution of the estates of persons dying intestate." The office that I hold makes me ineligible to a seat in the legislature, and my sense of the propriety of such a provision and of the "fitness of things," induces me to confine myself to the execution and administration of the laws, and makes me reluctant to assume wisdom to suggest as to their enactment.

With great respect, your obedient servant,

W. S. SHURTLEFF.

MIDDLESEX COUNTY.

Hon. OLIVER WARNER, *Secretary of the Commonwealth*:

In accordance with the request of the legislature, as set forth in chapter 77 of the Resolves for the year 1874, I most respectfully submit the following:

In this Commonwealth the law regulating the distribution of the estates of persons dying intestate is substantially the same as it has been for nearly two hundred years; questions arising under it have received judicial construction; its rules are generally well understood; and changes in it should not be made unless it should appear

that the present provisions of law operate unjustly, or are not in accord with other legislation of the present day. It would, therefore, be well to see what changes the legislature has made in the status of persons taking under the statutes of distribution.

The legislation of the last twenty years in this Commonwealth has made some very important and radical changes in the law relating to the rights of married woman and of their capacity to hold, manage and dispose of property. Until quite recently marriage was an absolute gift to the husband of all the wife's personal chattels in possession; her earnings so entirely belonged to her husband that he only could give a discharge of them. A legacy given to a wife, and her distributive share of an intestate estate, vested in her husband; her separate deed of real estate was invalid, and she was incapacitated from making any contract that could be enforced against her in a court of law. Recent legislation, however, has so altered the relation of husband and wife that, to all intents, so far as property and the power of contracting is concerned, their rights and liabilities are co-equal.

Notwithstanding such radical changes, affecting so vitally the welfare of married women, have been made, yet there has been no material change in the statute of distributions; and in this respect legislation has not kept pace with public opinion or the spirit of the age.

In order that the law concerning the distribution of intestate estates should, in a measure, conform to the legislation of the present day, I would suggest that the following alterations be made in the existing law:

Clause "second" of section 1, chapter 91 of the General Statutes (which chapter is made a part of the statute of distributions by clause third of section 16 of chapter 94 of the General Statutes), provides that if the intestate leaves no issue, then his estate shall descend to his father.

This should be altered as follows:

Second. If he leaves no issue, then in equal shares to his father and mother.

When a married woman had no power of making valid contracts relating to her property, and when all her personal estate vested in her husband, the above clause was in perfect harmony with the then existing law; for it would be of no special advantage to the wife to succeed to one-half or any share of her child's personal estate, if it at once became the property of her husband. As the law formerly stood, it was correct legislation; but now, when she has the free and untrammelled right to use, manage and enjoy her property in such manner as she desires, without being subjected to

the control or interference of her husband, what reason or justice is there, that she, equally the next of kin with the father, should be deprived of any share of her child's estate, and her husband take the whole? Numerous examples of the injustice and hardship of the present rule will suggest themselves. It sometimes happens that a woman has a worthless husband who spends his earnings in dissipation, and she by her labor supports herself and family, and her son dies intestate, leaving a few thousand dollars. If the whole estate, as by the present law, went to the father, it would be foolishly squandered. If, as by the proposed change, one-half went to the mother, she by her care and thrift could keep herself and family from want. Under any circumstances, the property being divided into two parts, the chances would be less of its being expended in dissipation or speculation.

Clause third of said section 1 is as follows:—

"If he leaves no issue nor father, then in equal shares to his mother, brothers and sisters, and to the children of any deceased brother and sister by right of representation."

Clause fourth of said section is as follows:—

"If he leave no issue nor father, and no brother nor sister living at his death, then to his mother, to the exclusion of the issue, if any, of deceased brothers or sisters."

In place of the above, I would substitute the following:—

Third. If he leaves no issue nor mother, then to his father.

Fourth. If he leaves no issue nor father, then to his mother.

Fifth. If he leaves no issue, no father nor mother, then to his brothers and sisters, and to the issue of any deceased brother or sister by right of representation.

In the above I have only sought to carry out, in the distribution of the estate of a deceased child, what seems to be the sound and well-considered public sentiment upon the rights of married woman as evinced by recent legislation.

Unless the above proposed change (giving the estate to the mother, if the intestate child left no issue, nor father) should be adopted; the word "issue" should not be substituted for "children" in the third clause of said section 1; for by such change the mother, the next of kin of the deceased, might be compelled to share the estate of her own child equally with such remote relations as grand-children or great-grand-children, which seems manifestly unjust.

The sixth clause of said section 1 is as follows :—

“ Sixth. If a person dies, leaving several children, or leaving one child and the issue of one or more others, and any such surviving child dies under age, and not having been married, all the estate that came to the deceased child by inheritance from such deceased parent, shall descend in equal shares to the other children of the same parent, and to the issue of any such other children who have died, by right of representation.”

The seventh clause of said section 1 is as follows :—

“ Seventh. If at the death of such child who shall have died under age, and not having been married, all the other children of his said parent are also dead, and any of them having left issue, the estate that came to such child by inheritance from his said parent shall descend to all the issue of the other children of the same parent; and if all the issue are in the same degree of kindred to the child, they shall share the estate equally; otherwise, they shall take according to the right of representation.”

By the above, the distribution of the estate of a deceased person is made dependent upon his age or marriage. If he dies under age and unmarried, his mother and his half-brothers and sisters are excluded from any share of his estate. This rule proceeds upon the theory that, as the child, dying under age, had no power to dispose of his estate, by reason of his disability of minority, his estate is to be taken as a part of the parent's estate remaining to be distributed, and therefore goes to those who would have taken as distributees of the parent.

By statute, the kindred of half-blood inherit equally with those of the whole blood in the same degree, and would take equally with own brothers and sisters any property that their deceased brother or sister acquired from any source other than from his or her parent.

Is there sufficient reason for this distinction? Does not the estate the minor acquired from his parent vest as absolutely in him as an estate derived from another source? And would not the mother and half-brother or sister of the deceased minor be as dear to him as the issue of a deceased brother or sister?

I therefore suggest that clauses sixth and seventh of said section 1 be stricken out.

Section 1 of chapter 91 of the General Statutes, as altered by the above proposed changes, would read as follows :—

SECTION 1. When a person dies seized of land, tenements or hereditaments, or of any right thereto, or entitled to any interest therein, in fee simple, or for the life of another, not having lawfully devised the same, they shall descend, subject to his debts (except as provided in chapter one hundred and four) in manner following :—

First. In equal shares to his children, and the issue of any deceased child by right of representation; and if there is no child of the intestate living at his death, then to all his other lineal descendants. If all the descendants are in the same degree of kindred to the intestate, they shall share the estate equally; otherwise, they shall take according to the right of representation.

Second. If he leaves no issue, then in equal shares to his father and mother.

Third. If he leaves no issue nor mother, then to his father.

Fourth. If he leaves no issue nor father, then to his mother.

Fifth. If he leaves no issue, and no father nor mother, then to his brothers and sisters, and to the issue of any deceased brother or sister, by right of representation.

Sixth. If he leaves no issue, and no father, mother, brother nor sister, then to his next of kin in equal degree; except that when there are two or more collateral kindred in equal degree, but claiming through different ancestors, those who claim through the nearest ancestor shall be preferred to those claiming through an ancestor who is more remote.

Seventh. If the intestate leaves a widow and no kindred, his estate shall descend to his widow; and if the intestate is a married woman, and leaves no kindred, her estate shall descend to her husband.

Eighth. If the intestate leaves no kindred, and no widow or husband, his or her estate shall escheat to the Commonwealth.

And I recommend that the above be substituted in place of section 1, chapter 91, of the General Statutes.

By such substitution, the rules governing the descent of real estate would be altered, but I know of no reason why any different rule should prevail in the descent of real and in the distribution of personal estate, so far as the same would be affected by the above change.

GEORGE M. BROOKS,

Judge of Probate Court for the County of Middlesex.

NOVEMBER 25, 1874.

NANTUCKET COUNTY.

PROBATE OFFICE, NANTUCKET, Nov. 16, 1874.

SIR:—In reply to a communication received at this office, entitled "Resolve for obtaining information with reference to the expediency of a change in the laws regulating the distribution of intestate estates," I would respectfully say, that, after a careful consideration of the subject, I have to suggest only one change as being expedient; viz., that in reference to the distribution of personal prop-

erty, where the intestate died without issue, leaving a widow. In that case, it seems to me, that a more liberal provision should be made for the widow, than the law now provides for; so where the amount of personal estate is comparatively small, the widow should have the whole, up to ten thousand dollars.

And to that end, I would respectfully suggest, that the sixth clause of the sixteenth section of chapter ninety-four of the General Statutes be amended, by striking out the word *five* in the second line, and substituting the word *ten* therefor.

Very respectfully, your obedient servant,

THADDEUS C. DEFRIEZ,

Judge of the Probate Court for Nantucket County.

HON. OLIVER WARNER, *Secretary of the Commonwealth, Boston, Mass.*

SUFFOLK COUNTY.

BOSTON, Nov. 30, 1874.

HON. OLIVER WARNER, *Secretary of the Commonwealth:*

DEAR SIR:—By chapter 77 of the Resolves of 1874, the judges of the probate courts are requested to give their opinions as to certain matters relating to the distribution of intestate estates, and the communications received prior to December 1st, proximo, are to be published. I do very much desire to express my opinion upon these questions; but I regret to say that the pressure of official duty has borne so heavily upon me, that I have not been able, within the time limited, to make such an examination of the subject, before submitting any suggestions thereupon, as its importance demands, and as is due to the legislature.

If the subject is referred to a committee, I hope to be able to appear before them and submit views based upon thorough investigation.

Yours truly,

ISAAC AMES.

WORCESTER COUNTY.

WORCESTER, Nov., 1874.

To the Secretary of the Commonwealth of Massachusetts:—

In reply to the request contained in Resolve 77 of the Acts and Resolves of the year 1874, entitled a "Resolve for obtaining in-

formation with reference to the expediency of a change in the laws regulating the distribution of intestate estates," I take the liberty to present the following suggestions, although some of the views may not be exactly responsive to the question presented by the Resolve.

So long as the revenue laws of the United States required stamps upon letters of administration and probate of wills in cases where the value of the estate exceeded a certain sum, the practice prevailed, requiring an affidavit as to the estimated value of the estate, to be filed in each case. In this county the practice of filing such affidavit is continued. It aids the judge much in ascertaining, at a glance, what is the estimated value of the estate, and is of very great service in enabling him to fix the amount of the official bond in any case before the court. The responsibility of an executor, administrator, guardian or trustee, is no greater than in cases in which no affidavit of value is filed. I am satisfied that it would be a wise provision of law which should require an affidavit of the estimated value of the trust estate upon every petition for the appointment of an executor, administrator, guardian or trustee, by the probate court.

I think that the notifications required by law in proceedings in probate courts are liable to be entirely insufficient. Of course, in cases in which all adult persons interested, and guardians of all minors interested, file their assent, there is no reason for a further notification; but with the numerous newspapers which are published, especially in the large counties, a citation published only in a newspaper *to be selected by the party petitioning or rendering an account*, although a notice in law, is liable to be no notice in fact to the parties interested. It is true that the judge may require further notice to be given; but, in the absence of any special reason brought to his attention, a citation published in some newspaper selected by the party petitioning, or rendering an account, is generally the only notice given. In this county a practice has been adopted, that, in addition to the citation published in a newspaper, a copy of the same shall be sent by mail, postage prepaid, and directed to each person known to the petitioner or accountant to be interested in the proceedings. I am prepared to recommend the passage of a law requiring that in all cases in the probate court in which a citation for a hearing is ordered to be published in some newspaper, there shall also be a copy of the citation sent by mail, postage prepaid, directed to each party known to the petitioner or accountant to be interested in the estate, unless the judge shall order that said notice by mail shall be dispensed with, the time when said notices shall be

deposited in the post-office to be fixed by the judge or register in issuing the order of notice.

I suggest that some new provisions be made in reference to the distribution of property in cases of adoption. In my opinion, the law in such cases should be so clearly stated, that, upon the death of an adopted child, unmarried, leaving property, and no issue, the adopting father and mother and the survivor of them should inherit the same. Should an adopted child die married, leaving property and no issue, the surviving husband or wife should, by all means, inherit the same. In case an adopting father and mother are dead, it should be made clear who shall inherit the property of such deceased adopted person. Shall it be blood-relatives, or the kindred by adoption? In view of the numerous adoptions of children which are decreed in this State, soon or late embarrassing questions will be liable to occur upon this subject, unless some provision of law shall be made which shall provide for the case. Suppose a child has been adopted (as the same person may be) a number of times, shall the child inherit property from its own parent and from each adopting parent? The whole subject of inheriting property by an adopted child, and the distribution of the estate of an adopted child dying without issue, should be thoroughly understood and clearly stated. It may not be inappropriate to say that in my opinion the more nearly a child, by adoption, can be made to feel that, in relation to the family and friends of the adopting parents, he or she is considered, as far as possible, the same as though of kindred blood, the more truly is the happiness of the child promoted, and the benign object of the laws relating to adoption more effectually accomplished.

The changes in the legal rights of husbands and wives, in reference to property, which have been made during the last twenty-five years, seem to demand the careful attention of the law-makers of the State to the matter of their respective rights in the inheritance and distribution of each other's estate. In the absence of a will, it is difficult for me to see why the rights of a wife in the estate of her deceased husband should not be the same as the rights of a husband in the estate of his deceased wife. Especially would this seem to be appropriate in cases where there is no issue of the marriage, or of a prior marriage. I presume that in nine cases out of ten, when a husband and wife have accumulated property together, and one has died without issue of the marriage, or of a former marriage, the survivor feels aggrieved, if he or she is not entitled to the whole of the estate of the deceased. It is perfectly natural that this feeling should exist. Deprived of the blessing of children to love and care for, the parties have been all in all to each other, with common

labors, common hopes and common aspirations. Their interests have become daily more nearly identical, and when their confidential and intimate relations are severed, it seems to the survivor rigid, harsh and unfeeling, that the common estate should be rent in pieces, or pass into the hands of collateral kindred, whose object is generally to hold all the estate they can, regardless of the feelings which have grown with the growth and strengthened with the strength of the husband and wife, who have lived for each other, planned and labored, planted and harvested, with the single idea of placing themselves and the survivor in comfort, if not in affluence.

Among the numerous instances happening within my own experience, I mention the following : A young couple were married. The wife became the owner of a house-lot by deed of gift. The father of the husband erected a fine house upon the land. Within a few months the wife died without issue, leaving no father, mother, brother or sister. Her heirs were her next of kin, in equal degree, who were her three surviving grandparents. The husband, by the laws of Massachusetts, was, by the death of his wife, deprived at once of all right even to occupy the house which his father had built for him. The fact that the grandparents of the wife relinquished the rights which the law gave to them, does not in the least affect the force of the illustration.

A husband married a wife much younger than himself, invested most of his property in a house and lot, and caused the same to be conveyed to her. Within a few months she died, leaving an infant. The child became the owner in fee of the real estate, to purchase which the father had devoted the earnings of his life, while the father became a mere tenant for life of the estate, subject to forfeiture for waste, if he fails to keep the estate in repair.

A husband caused his real estate to be conveyed to his wife, she died without issue, leaving no father, mother, brother, sister or grandparent. The property descended to collateral kindred in equal degree, and the rights of the husband in the estate were ended, although he had paid the whole consideration for the estate which had been conveyed to the wife. There was no life estate left for the husband.

It may be said that the state of things suggested upon the death of one of the parties might be remedied by mutual wills, properly executed. This is true, but would it not be better to have laws which will accomplish what every disinterested person feels is just and right, and leave it to the parties, if they wish to provide for outsiders, to make testamentary provisions which will accomplish the object.

In this connection I see no reason why, in case of the death of a

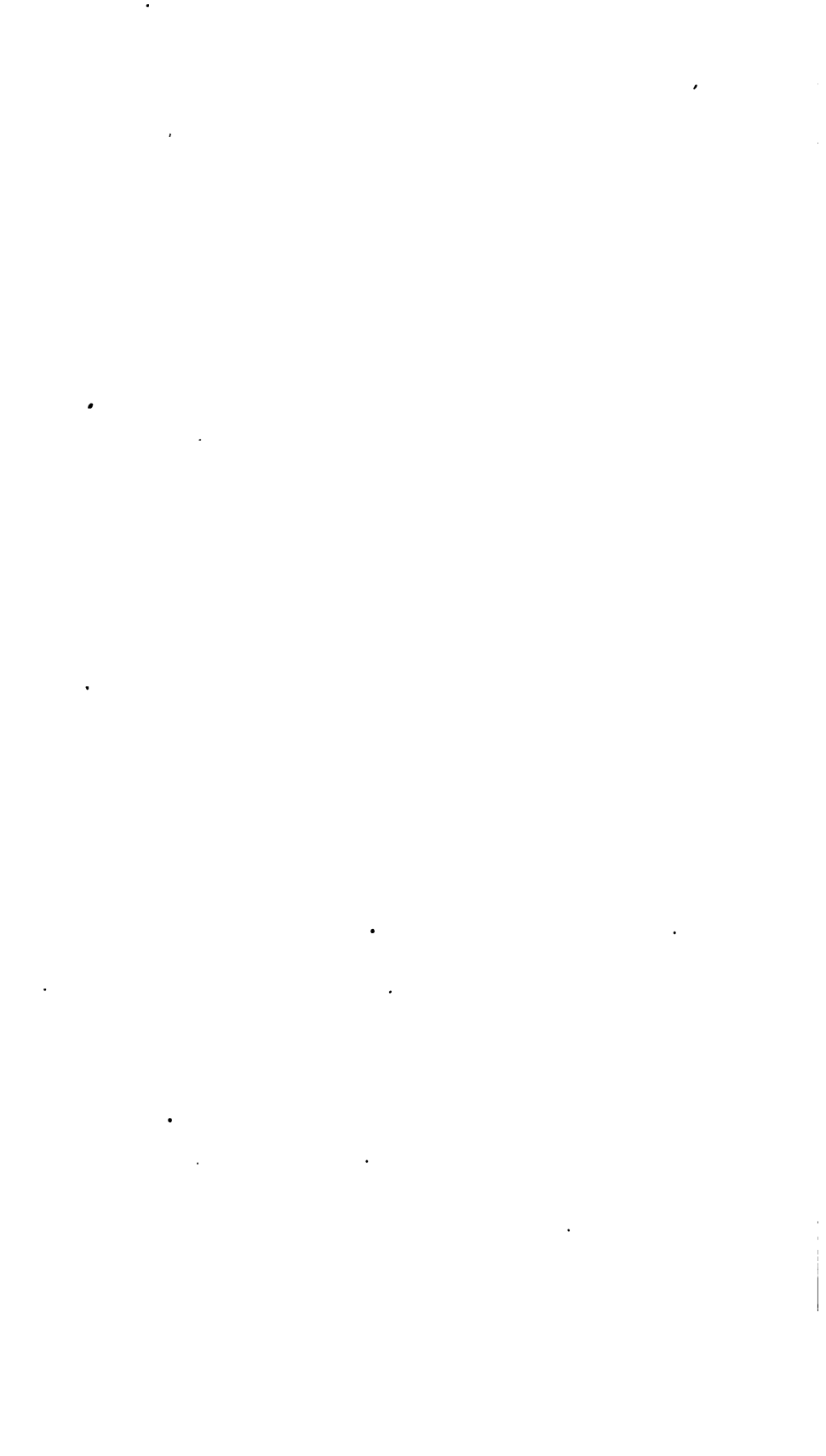
child leaving property, the mother should not have the same right of inheritance and distribution which the father has. The child is certainly as dear to the mother as it can be to the father; she has suffered more for the child than it has been possible for the father to suffer. Any amount of property is poor consolation for a heart that is breaking; but why should the mother be ignored in the matter of the property of a deceased child, for the simple reason that she has a husband living, who can quietly take possession of the whole estate, leaving the wife without the legal right to a single dollar's worth thereof. Why should the mother's interests be so persistently disregarded? It is the legitimate result of the position which was assigned to woman in the infancy of jurisprudence, and which, year by year, is becoming essentially modified, and shorn of its objectionable features, until, in the process of time, the rights of husband and wife will be distinctly recognized, and they shall become, what the ages are demonstrating is true; to wit, that God intended that husband and wife should be *equal*.

There is a result which follows from this course of thought, which some of the reformers of the law seem to overlook. If the wife is to hold her property and her earnings, and is to have equal rights of inheritance and distribution with her husband; if, in other words, the wife is to be the equal of her husband in her rights, she should be his equal in her responsibilities. If her property and earnings, which formerly belonged to the husband as one of his marital rights, are now secured to her, shall not the wife be held liable to contribute towards the support of the family according to her means, in equal proportions with her husband? I confess that while I cannot see why the wife shall not have equal rights with her husband, it is equally difficult for me to see why she should not take her equal share of the responsibilities growing out of the family relation in proportion to her means. Having no grievances of my own to complain of, I can at least look at this question impartially.

I have thus briefly referred to certain matters in the light of observation and experience, wherein it seems to me that the laws of the Commonwealth may be appropriately amended. I have felt no desire to trouble the legislature of Massachusetts with any of my peculiar ideas upon any subject; but presuming that those who passed the Resolve wished to know whether the judges of the probate courts have any ideas to present, I have stated a few of my own ideas in this paper, hastily written and respectfully submitted.

HENRY CHAPIN.











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